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

VOLUME II: Laboratory Reports

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

Prepared for:

US Army Corps of Engineers
Buffalo District
1776 Niagara Street
Buffalo, NY 14207-3199

Prepared by:

Richard Karn and Lynn Escalon*
Environmental Processes Chemistry Branch

and

Guilherme Lotufo
Environmental Processes Risk Assessment Branch

3909 Halls Ferry Road
Vicksburg, MS 39180
Telephone: (601) 634-3863 / Facsimile: (601) 634-2742

MARCH 2004

* Analytical Services, Inc. Huntsville, AL 35209

Table of Contents
Volume II: Laboratory Reports

Chemistry

Bioaccumulation Tests

List of Appendices

CHEMISTRY

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).

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.

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 M. 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 N contains the sampling field logs.

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. 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.

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 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.

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’

Chemical analysis summary tables for the sediments and *Lumbriculus variegatus* tissues are presented in Appendices A and B. Appendix C contains quality assurance/quality control (QA/QC) summary tables. The chemical analysis reports for the sediments and tissues are located in Appendices D and E. The bioaccumulation results are summarized in Appendix F and Appendix G contains the bioaccumulation results including statistics.

2.0 ANALYTICAL METHODS & CHAIN OF CUSTODY

Chemical analyses were performed using the Eighteenmile Creek sediments and *Lumbriculus variegatus* tissues. Summaries of the sediment and tissue data are located in Appendices A and B. The bioavailability and bioaccumulation can be determined from the chemical analyses of the sediments and *Lumbriculus variegatus* tissues. Review of the historical data from Eighteenmile Creek provided a list of contaminants of concern.

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 (Appendix I), a summary of the analyses performed including the required reporting limits is listed in Table 2.

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

As outlined in the scope of work (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.

The fifteen sediment samples and five composite sediments were received at ERDC EPC-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) contains copies of the chain-of-custody and cooler receipt records.) Samples were stored at 4°C.

3.0 SEDIMENT CHEMICAL ANALYSIS

The fifteen sediment samples and five composite sediments were received at ERDC EPC-Vicksburg on 29 August 2003. 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.

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**

3.1 SEDIMENT QUALITY ASSURANCE /QUALITY CONTROL (QA/QC)

Quality Assurance and Quality Control (QA/QC) data is summarized in Tables 1-2 of Appendix C and included in the analytical reports found in Appendix D. All

QA/QC followed US EPA methodology as described in the scope of work (Appendix J).

All compounds for the analysis of pesticides were within acceptable limits for the method blank, laboratory control sample (LCS) recoveries, surrogates, and relative percent differences (RPDs). The matrix spike/matrix spike duplicate (MS/MSD) for sample 115078 was within limits for all compounds except for low recoveries of aldrin, d-BHC, and a-BHC. The replication of these low recoveries in the MS and MSD indicate a matrix effect. The recovery for DDE was 0% and 13%. The sample concentrations for DDE were significantly higher than spiked amounts resulting in erratic recoveries for these analytes.

For the PCB analysis, the method blank, LCS, LCSD, surrogates, and RPDs were within laboratory control limits. For sample 115018, the MS and MSD recovery values for PCB 1016 were 161% and 164%, which exceeded the laboratory QC limit of 140%. The MS/MSD recovery values for PCB 1260 were within the laboratories QC limits (102% and 104%). The high recoveries for PCB 1016 in the MS/MSD appear to be due to a matrix effect.

All method blanks, LCS, surrogates, and RPDs were within laboratory control limits for the PCB congener analysis. All MS/MSDs were within laboratory control limits except for congeners 18, 31, 44, 49, and 52, which were not reported because sample concentrations were significantly higher than spiked amounts resulting in erratic recoveries for these analytes. All MS/MSD RPDs were <40%. A sample duplicate was extracted and analyzed for site EMC-4 with RPDS <40% for all detectable analytes present in the sample. The calibration for congener 77 had a relative standard deviation (RSD) of 27.1% on the SPB-octyl column; however, the analyte had a linear coefficient of 0.994. Therefore, the reported values that were at or below the response of the low standard were manually calculated.

For the metals analysis, the continuing calibration blanks (CCBs) were below the detection limits except for copper, lead, chromium, cobalt, nickel, zinc, aluminum, iron, sodium, and magnesium. The analytes detected in the CCBs were low concentrations compared to the high sample concentrations, which resulted in minimal sample bias. All RPDs were within laboratory control limits. All analytes in the LCS and MS were within the method control limits (75-125%) except for antimony (Sb) and aluminum (Al) in the MS. The low recovery of antimony is due to the digestion methodology requiring the use of nitric acid. Appendix M contains an article published in Environmental Science & Technology that discusses low antimony recoveries in geological materials using nitric acid for digestions.

The following sections for the sediment analysis address specific analytical problems encountered during the analysis of the samples. Appendix D contains the laboratory reports and corrective action forms for the sediment analyses.

3.2 PESTICIDE ANALYSIS – SEDIMENT

Approximately 15 g-wet weight aliquots of 9 sediments (114792-800) plus method blank, laboratory control spike (LCS), matrix spike, and matrix spike duplicate were extracted by SW846 method 3545 (Accelerated solvent extraction) using hexane/acetone as the extraction solvent on 9 September 2003 and 11 sediments (114801-12) plus method blank, laboratory control sample (LCS), and laboratory control sample duplicate (LCSD) were extracted on 10 September 2003. The extracts were concentrated and cleaned up following a modification of method 3620B (florisil) and concentrated to 5ml for analysis. The extracts were further treated for sulfur following method 3660B using tetrabutylammonium (TBA) sulfite reagent. The samples were extracted and analyzed within holding times.

Pesticides were analyzed on 29 September 2003 and 30 September 2003 following SW846 method 8081 using a Hewlett-Packard 6890 and 5890 gas chromatographs. Each GC has dual capillary columns equipped with dual electron capture detectors. For the 6890 GC, the primary capillary column used for the analysis was a DB-1701 30 meter X 0.32mm ID X 0.52-micron film thickness column and the secondary column was a Restek CLP Pesticide 1 30 meter X 0.32mm ID X 0.25-micron film thickness column. For the 5890 GC, the primary column was a Restek CLP Pesticide 1 30meter X 0.32mm ID X 0.25-micron film thickness column and the secondary column was a Restek CLP Pesticide 2 30 meter X 0.32mm ID X 0.25-micron film thickness column.

A six-point calibration curve for individual standard mix A and B (INDA and INDB) was analyzed on 29 September 2003 on the 6890 GC. The samples (115074-82) were analyzed according to SW846 method 8081 on 29 September 2003. The CCV-1 for INDB had an average difference (D) of 11.6% (first column) and 7.76% (second column) and INDA had an average D of 11.1% and <15%, respectively. CCV-2 for INDA had an average D of 9.30% and <15%, respectively and INDB had an average of 8.77% and<15%, respectively. Using a low standard of 2.5/5.0 ng/ml, wet sample weight of 15.0 g, and an extract volume of 5 ml yielded a detection limit of 0.83/1.67 µg/Kg. Correcting for % solids for the samples yielded detection limits of 1.11-2.44 µg/Kg. The samples were extracted and analyzed within holding times. The blank, LCS, surrogates, and RPDs were within laboratory control limits except as noted. The 115078 matrix spike/matrix spike duplicate (MS/MSD) had low recoveries for aldrin, d-bhc, and a-bhc. The replication of these low recoveries indicated a matrix effect. The MS/MSD recovery for DDE was 0% and 13%. The sample concentrations for DDE were significantly higher than spiked amounts resulting in erratic recoveries for these analytes.

A six-point calibration curve for individual standard mix A and B (INDA and INDB) was analyzed on 24 September 2003 on the 5890 GC. The samples (115083-93) were analyzed according to SW846 method 8081 on 30 September

2003. The CCV-1 for INDA had an average D of 9.11% (first column) and 8.69% (second column) and INDB had an average D of 8.92% and 10.8%, respectively. CCV-2 for INDA had an average D of 18.8% and 9.12% and INDB had an average of 18.9% and 10.4%, respectively. Using a low standard of 2.5/5.0 ng/ml, wet sample weight of 15.0 g, and extract volume of 5 ml yielded a detection limit of 0.83/1.67 µg/Kg. Correcting for % solids for the samples yielded detection limits of 1.21-2.44 µg/Kg. The samples were extracted and analyzed within holding times. The blank, LCS, LCSD, surrogates, and RPDs were within lab control limits.

The pesticide analytical reports are summarized in Appendix A (Table 1) and located in Table 1 of Appendix D.

3.3 POLYCHLORINATED BIPHENYL (PCB) ANALYSIS – SEDIMENT

Approximately 15 g-wet weight aliquots of 1 sediment (115018, EMC-4 QA) plus method blank, laboratory control spike (LCS), LCSD, matrix spike, and matrix spike duplicate were extracted by SW846 method 3545 (Accelerated solvent extraction) on 10 September 2003. The extracts were concentrated and cleaned up following a modification of method 3620B (florisil) and concentrated to 5ml for analysis. The extracts were further treated for sulfur following method 3660B using tetrabutylammonium (TBA) sulfite reagent.

A six-point calibration for PCB1016/1260, PCB1242, and PCB1248 was analyzed beginning on 7 October 2003. CCV-1 had a % difference (D) that was <15% on both the primary and secondary columns for PCB1016/1260. CCV-2 for PCB1016/1260 had a %D that was <15 on both columns. Using a low standard of 25 ng/mL, 5 mL extract volume, and 15.0g wet sample weights yielded approximately an 8.33 µg/Kg detection limit for these samples. Correcting for percent solids yielded sample detection limits of 20.4 µg/Kg.

The samples were extracted and analyzed within holding times. The blank, LCS, LCSD, surrogates, and RPDs were within laboratory control limits. The recovery values for PCB1016 in sample 115018-matrix spike and matrix spike duplicate (MS/MSD) were 161% and 164%, which exceeded the laboratory QC limit of 140%. The recovery values for PCB1260 were 102% and 104% in the MS/MSD. The laboratory control sample/ laboraroty control sample duplicate (LCS/LCSD) values were within limits; therefore, the high recovery in the MS/MSD appears to have been due to a matrix effect in the sample.

The PCB analytical reports are summarized in Appendix A (Table 2) and located in Table 2 of Appendix D.

3.4 PCB CONGENER ANALYSIS – SEDIMENT

Approximately 15 g-wet weight aliquots of 9 sediments (114792-800) plus method blank, laboratory control spike (LCS), matrix spike, and matrix spike duplicate were extracted by SW846 method 3545 (Accelerated solvent extraction) using hexane/acetone as the extraction solvent on 9 September 2003 and 11 sediments (114801-12) plus method blank, laboratory control sample (LCS), and laboratory control sample duplicate (LCSD) were extracted on 10 September 2003. The extracts were concentrated and cleaned up following a modification of method 3620B (florisil) and concentrated to 5ml for analysis. The extracts were further treated for sulfur following method 3660B using tetrabutylammonium (TBA) sulfite reagent. The samples were extracted and analyzed within holding times.

The extracts were analyzed on 21 and 24 September 2003 for PCB congeners by SW846 method 8082 using a Hewlett-Packard 5890 gas chromatograph with dual capillary columns equipped with dual electron capture detectors. The primary capillary column used for the analysis was a J&W DB5 30 meter X 0.25mm ID X 0.25-micron film thickness column. The secondary column was a Supelco SPB-octyl 30meter X 0.25mm ID X 0.25-micron film thickness column. Using a low standard of 2 ng/mL, 5mL extract volume, and 15.0g wet sample weights yielded approximately a 0.67-µg/Kg-detection limit for these samples. Correcting for sample dry weight yielded sample detection limits of 0.89 to 1.95 µg/Kg.

The samples were calculated against a 5 level calibration curve, which was analyzed on 28 August 2003. This curve had an average RSD for all analytes of <20% on both columns. For the analyses on 21 and 24 September 03, all CCVs had an average D of <15%. Pentachloronitrobenzene and 4,4'-dibromobiphenyl were used as internal standards. All tetrachloro-m-xylene (surrogate) recoveries were within laboratory limits. No MS/MSD recoveries were reported for congeners 18, 31, 44, 49, and 52 because sample concentrations were significantly higher than spiked amounts resulting in erratic recoveries for these analytes. All MS/MSD RPDs were <40%. A sample duplicate was extracted and analyzed for site EMC 4 with RPD <40% for all detectable analytes present in the sample. All LCS recoveries and RPDs were within laboratory limits. The calibration for congener 77 had a RSD of 27.1% on the SPB-octyl column; however, the analyte had a linear coefficient of 0.994. Therefore, the reported values that were at or below the response of the low standard were manually calculated.

No data was reported for congeners 15, 87, 153, 171, 159, and 86 due to co-elutions with other congeners on both columns. Congener 97 is reported as a total of 86 and 97. Congener 101 is reported as a total of 101 and 90. Congeners flagged with a C are estimated values because they co-elute with other congeners on one of the columns. The presence of the congener is confirmed but the concentration is not confirmed due to the co-elution.

The congeners present in the sample, EMC-4 QA, were totaled and compared to the total of the PCBs present in the same sample. For comparison purposes, the reporting limit was divided by three and used in the calculation of the total for all congeners and PCBs that were below the laboratory reporting limits. The value of three was chosen because the method detection limit is approximately one third of the reporting limit. The total congeners present in the sample were 269 µg/kg and the total PCBs present in the sample were 759 µg/kg. The RPD was 23.9. Despite the difficulties in reporting some congeners due to co-elution and matrix interferences, the RPD is within the limits established in EM 200-1-3, Appendix I, Shell for Analytical Chemistry Requirements (01 Feb 01). The total congeners reported for the sample represent 35.4% of the total PCBs reported.

The PCB congener analytical reports are summarized in Appendix A (Table 3) and located in Table 3 of Appendix D.

3.5 METALS ANALYSIS - SEDIMENT

The 20 sediment samples (114848-867) were digested on 22 September 2003 by SW846-3050B for Inductively Coupled Plasma Mass Spectrometer/Heated Graphite Furnace (ICPMS/HGA). The 20 sediment samples (114848-867) were digested on 25 September 2003 by SW846-3050B for analysis by Inductively Coupled Plasma (ICP) and antimony (Sb) for analysis by Heated Graphite Furnace (HGA). The digested samples were analyzed on 25-26 September 2003 and 6 October by SW846-6020A using a Perkin-Elmer Elan 6000 ICPMS. Samples, 114848 –114865, were analyzed for Zn, Al, Ca, Fe, Mg, Mn, Ba, and Cr by SW846-6010B on 1 October 2003 using a Perkin-Elmer Optima 3000DV ICP. Samples, 114866-114867, were analyzed by SW846-6010B on 8 October 2003 for Zn, Al, Ca, Fe, Mg, Mn, Ba, and Cr. Samples 114848-65 for antimony (Sb) were analyzed on 10 October 2003 by SW846-7041 using a Perkin-Elmer SIMAA 6000 HGA. All digestions and analyses were within method holding times.

The samples were analyzed against a three level calibration curve. The correlation coefficient for all of the curves was 0.999 or better. The samples were diluted 1/10 to to bring the sample concentrations within the calibration range. Any sample that exceeded the calibration was diluted 1/19 for the final reported value. All continuing calibration verifications (CCVs) were within the ± 10% limits. All continuing calibration blanks (CCBs) were below the detection limits except for copper, lead, chromium, cobalt, nickel, zinc, aluminum, iron, sodium, and magnesium. The analytes detected in the CCBs were low concentrations compared to the high sample concentrations, which resulted in minimal sample bias. All relative percent differences (RPDs) were <20%. All analytes in the LCS and MS were within the method range for analyte recovery of 75-125% except for antimony (Sb) and aluminum (Al) in the matrix spike. The low recovery of antimony is due to the digestion methodology requiring the use of nitric acid. Appendix M contains an article published in *Environmental Science &*

Technology that discusses low antimony recoveries in geological materials using nitric acid for digestions.

The metals analytical reports are summarized in Appendix A (Table 4) and located in Table 4 of Appendix D.

3.6 MERCURY ANALYSIS - SEDIMENT

The 20 sediment samples (114828-47) were received on 3 September 2003 by EPC-Omaha, digested on 18 September 2003, and analyzed on 19 September 2003 following SW846 method 7471A with atomic fluorescence detection. All QC were within method limits.

The mercury analytical reports are summarized in Appendix A (Table 5) and located in Table 5 of Appendix D.

3.7 TOTAL ORGANIC CARBON (TOC) ANALYSIS - SEDIMENT

The 20 sediment samples (114828-47) were received on 3 September 2003 by EPC-Omaha and analyzed on 10 October 2003. The samples were analyzed on a Tekmar/Dohrmann TOC analyzer following SW846 method 9060 with instrument manufacturer modifications. All QC were within method limits.

The TOC analytical reports are summarized in Appendix A (Table 5) and located in Table 5 of Appendix D.

3.8 DIOXIN ANALYSIS – SEDIMENT

The 15 sediment samples (114813-27) were received on 3 September 2003 by EPC-Omaha and were forwarded on 5 September 2003 to Severn Trent Laboratory (STL) of Knoxville, TN. STL received the samples on 6 September 2003 for dioxin analysis by SW846 Method 8290. The samples were extracted on 8-9 September 2003 and analyzed from 16-23 September 2003.

Sample EMC-15 exhibited internal standard recoveries that were outside QC limits (40-135%). The value for 13C-OCDD in sample EMC-15 was 38%. The 10:1 internal standard signal-to-noise ratio criterion was met in all cases. When properly applied, results from isotope dilution analyses are independent of internal standard percent recoveries. Therefore, since the internal standard signal-to-noise ratios were sufficient, the analysis results are not adversely affected.

The MS/MSD for sample EMC-2 was outside control limits (low) for OCDF. All positive 2378-TCDF results were confirmed on a DB-225 chromatography column. The analysis of the sample extract EMC-2, EMC-4, and EMC-10 on the DB-225 column exhibited co-eluting interferences which prevented accurate results. The 2378-TCDF results reported were obtained from the Rtx-5 analysis.

The Rtx-5 column is not isomer specific for 2378-TCDF; therefore, the reported value for 2378-TCDF is considered the highest amount of TCDF present.

The dioxin analytical reports are summarized in Appendix A (Table 6) and located in Table 6 of Appendix D. All Severn Trent narratives and laboratory reports are located in Appendix H.

3.9 PARTICLE SIZING - SEDIMENT

The five composite sediment samples (114787-91) were delivered to Geotechnical and Earthquake Engineering Branch, Materials Testing Center of ERDC-GSL, Vicksburg on 29 August 2003 for particle size analysis. The samples were analyzed on 18 September 2003. The particle size data is summarized in Table 7 (Appendix A) and located in Table 7 of Appendix D. The particle sizing data package is located in Appendix N.

4.0 TISSUE CHEMICAL ANALYSIS

Twenty-five tissue samples (RBU1-5) and three tissue controls were received at ERDC EPC-Vicksburg on 8 December 2003 from bioaccumulation studies performed by ERDC EPR using five Eighteenmile Creek sediments (RBU 1-5) in replicates of five. The samples were received into the lab at 0°C for processing.

The USACE ERDC Environmental Processes Chemistry Branch performed all chemical analyses on the tissues for pesticides, PCB congeners, and metals. All analyses followed EPA SW846 methodology. As found in the scope of work (Appendix H), a summary of the analyses performed is listed above in Table 3. Appendix B contains summary tables of the chemical analyses and Appendix E contains the analytical reports for the chemical analyses.

4.1 QUALITY ASSURANCE /QUALITY CONTROL – TISSUE

Quality Assurance and Quality Control (QA/QC) data is summarized in Tables 3 and 4 of Appendix C and is included in the analytical reports found in Appendix E. All QA/QC followed U.S. EPA methodology as described in the scope of work (Appendix I).

For the pesticide analysis, all method blanks, LCS, MS/MSD, surrogate recoveries, and RPDs were within laboratory control limits except for D-BHC in 116475 MS which had a recovery of 27.2% and for Heptachlor Epoxide in sample 116475 MS/MSD which had a recovery of 33.7% and 34.7%, respectively. The laboratory control limits range from 40-140%.

In the PCB congener analysis, the lowest standard was not used for some of the analytes, which is reflected in the reported detection limits. The calibration curve analyzed on 12 December 2003 had an average RSD of <20% or a r^2 >0.99 for all

analytes on both columns except for congener 70 which had a RSD of 21.2% on the SPB column. All surrogate recoveries were within laboratory control limits. All MS/MSD RPDs were <40% except for congener 138 which had a RPD of 67.3%. All LCS recoveries and RPDs were within laboratory control limits except for no spike recovery due to matrix interferences for congener 187 in LCS 2. Linear calibration was used for congeners 77 and 101 and the reported values that were at or below the response of the low standard were manually calculated.

For the metals analysis, all CCBs were within the ± 10% limits. Because the tissue sample replicates were three separate samples versus a split composite, many of the RPDs were not within the 20% limits. The RPDs for 116527 were < 20% for Al, Ag, Be, Cd, Cu, Na, and Se and all other elements were > 20%. The MS for 116527 for Be, Cd, Co, Mn, Ni, and Zn was within the 75 – 125% method range and all other elements were outside of the range. The RPDs for 116538 were < 20% for As, Ag, Cu, Mg, and Tl and all other elements were > 20%. The MS for As, Cu, Mn, Pb, Sb, and Zn were within the 75 – 125% method range and all other elements were outside of the range.

In the metals analysis, the post digest duplicates and spikes were a better indicator of instrument performance for the tissue samples and were analyzed for samples 116527 and 116538. For 116527, the RPD for all elements we <20% and the post digest spike for all elements was within the 75-125% method range. For 116538, the RPD for all elements was <20% except for Al and Zn and the post digest spike for all elements was within the 75-125% method ranges except for Zn.

Low concentrations of Zn, Al, Ba, and Fe were detected in the method blank for samples 116517-116531. Due to the high concentrations detected in the samples, the results are not biased. For samples 116532-116544, Zn, Ba, Mn, and Fe were detected in the method blank, which did not bias the results due to the high concentrations detected in the samples. Low concentrations reported for Cr, Ni, and Co in samples 116517-116531 may be biased high due to the detection of low concentrations of the element in the method blank.

The following sections for tissue analyses address specific analytical problems encountered during the analysis of the *L. variegatus* samples. Appendix E contains the laboratory reports and corrective action forms that provide details concerning various problems found during the tissue analyses.

4.2 PESTICIDE ANALYSIS - TISSUE

Approximately, 1.005-1.703 grams-wet weight aliquots of fifteen tissues (116461-475) plus method blank, laboratory control spike (LCS), 116475 matrix spike and matrix spike duplicate (MS/MSD) were extracted on 17 December 2003 and thirteen tissues (116476-88) plus method blank and LCS were extracted on 19 December 2003. All tissue extractions followed SW846 method 3550 (Sonication Extraction Method) modified for small sample amounts. The extracts were

concentrated and cleaned up following method 3620B (florisil). The samples were extracted and analyzed within holding times.

The extracts were analyzed beginning on 29 December 2003 by SW846 method 8081 using a Hewlett-Packard 5890 gas chromatograph with dual capillary columns equipped with dual electron capture detectors. The primary capillary column used for the analysis was a Restek CLP Pesticide 1 30 meter X 0.32 mm ID X 0.52-micron film thickness column. The secondary column was a Restek CLP Pesticide 2 30 meter X 0.32 mm ID X 0.25-micron film thickness column. Using a low standard of 2.5/5.0 ng/mL, 1 mL extract volume, and 1.0g wet sample weight yielded approximately a 2.5/5.0-µg/Kg-detection limit for these samples. Sample detection limits based on actual wet tissue weights that were extacted were1.47/2.94 to 2.5/5.0 µg/Kg for the tissues.

A six-point calibration curve for individual standard mix A and B (INDA and INDB) was analyzed on 23 December 2003. The first continuing calibration verification (CCV-1) for INDA had an average difference (D) of 10.1% on the primary column and 5.01% on the confirmation column and the %D for INDB was 9.52% for the primary column and 6.47% for the confirmation column. CCV-2 for INDA had an average D<15% on both columns and INDB had an average D of 8.55% and 6.04%. The CCV-3 for INDA had an average D of 12.8% and 10.3%, and INDB had an average D of 11.0% and 8.82%. For INDA, CCV-4 had an average D of 12.0% and 9.30% and 12.8% and 10.2% for INDB. CCV-5 had an average D of 14.2% and 11.1% for INDA and INDB had an average D of 11.2% and 8.16%.

All method blanks, LCS, MS/MSD, surrogate recoveries, and relative percent differences (RPDs) were within laboratory control limits except for 116475 MS D-BHC which had a recovery of 27.2% and for 116475 MS/MSD Heptachlor Epoxide which had a recovery of 33.7% and 34.7%, respectively. The laboratory reporting limits range from 40-140%.

The pesticide analytical reports are summarized in Appendix B (Table 1) and located in Table 1 of Appendix E.

4.3 PCB CONGENER ANALYSIS – TISSUE

Approximately, 1.00-1.79 grams-wet weight aliquots of fifteen tissues (116489-503) plus method blank, laboratory control spike (LCS), 116497 matrix spike and matrix spike duplicate (MS/MSD) were extracted on 10 December 2003 and 13 tissues (116504-16) plus method blank and LCS were extracted on 15 December 2003. All tissue extractions followed SW846 method 3550 (Sonication Extraction Method) modified for small sample amounts. The extracts were concentrated and cleaned up following method 3630C (silica gel). The samples were extracted and analyzed within holding times.

The extracts were analyzed on 12 and 17 December 2003 for PCB congeners by SW846 method 8082 using a Hewlett-Packard 5890 gas chromatograph with dual capillary columns equipped with dual electron capture detectors. The primary capillary column used for the analysis was a J&W DB 5 30 meter X 0.25 mm ID X 0.25-micron film thickness column. The secondary column was a Supelco SPB-octyl 30 meter X 0.25 mm ID X 0.25-micron film thickness column. Using low standards of 1 or 2 ng/mL, 1 mL extract volume, and 1.0g wet sample weights yielded approximately a 1 or 2-µg/Kg-detection limit for these samples.

The samples were analyzed against a six level calibration curve, which was analyzed on 12 December 2003. For some analytes, the lowest standard was not used which is reflected in the reported detection limits. This curve had an average RSD of <20% or an r^2 >0.99 for all analytes on both columns except for congener 70 which had a RSD of 21.2% on the SPB column. For the analyses on 12 and 17 December 03, all CCVs had an average D of <15%. Pentachloronitrobenzene and 4,4'-dibromobiphenyl were used as internal standards. All tetrachloro-m-xylene (surrogate) recoveries were within laboratory limits. All MS/MSD RPDs were <40% except for congener 138 which had a RPD of 67.3%. All LCS recoveries and RPDs were within laboratory limits. No spike recovery for congener 187 was reported for LCS 2 due to interferences. Linear calibration was used for congeners 77 and 101 and the reported values that were at or below the response of the low standard were manually calculated.

No data was reported for congeners 15, 141, 153, 156, 159, 171, and 187 due to coelutions with other congeners on both columns except for samples that were at or below the laboratory reporting limit. Congener 101 is reported as a total of 101 and 90, and congener 97 is reported as a total of 97 and 86. Congeners flagged with a C are estimated values because they coelute with other congeners on one of the columns. The presence of the congener is confirmed but the concentration is not due to the coelution.

The PCB congener analytical reports are summarized in Appendix B (Table 2) and located in Table 2 of Appendix E.

4.4 METALS ANALYSIS - TISSUE

The twently-eight tissue samples (EPC sample id: 116517-44) ranging in wet weight from 0.50 - 1.0 g each were digested by SW846-3050B on 10 December 2003 for HGA/ICPMS. The digested samples were analyzed on 29 December 2003 by SW846-6020A using a Perkin-Elmer Elan 6000 ICPMS. Al and Zn were analyzed on 6 January 2004 by SW846-6010A using a Perkin-Elmer Optima 3000DV ICP.

The samples were analyzed against a three level calibration curve. The correlation coefficient for all of the curves was 0.999 or better. The samples were diluted 1:9 - 1:99 to obtain concentrations within the calibration curve. All CCVs were

within the ± 10% limits. Because the tissue sample replicates were three separate samples versus a split composite, many of the RPDs were not within the 20% limits. The RPDs for 116527 were < 20% for Al, Ag, Be, Cd, Cu, Na, and Se and all other elements were > 20%. The MS for 116527 for Be, Cd, Co, Mn, Ni, and Zn was within the 75 – 125% method range and all other elements were outside of the range. The RPDs for 116538 were < 20% for As, Ag, Cu, Mg, and Tl and all other elements were > 20%. The MS for As, Cu, Mn, Pb, Sb, and Zn were within the 75 – 125% method range and all other elements were outside of the range.

Post digest duplicates and spikes were a better indicator of instrument performance for the tissue samples and were analyzed for samples 116527 and 116538. For 116527, the RPD for all elements was < 20% and the post digest spike for all elements was within the 75 – 125% method range. For 116538, the RPD for all elements was < 20% except for Al and Zn and the post digest spike for all elements was within the 75 – 125% method range except for Zn.

Due to the high concentrations detected in the samples (116517-531) for Zinc, Aluminum, Barium, and Iron, the results are not biased although low concentrations of these metals were detected in the method blank. Due to the high concentrations detected in the samples (116532-544) for zinc, barium, manganese, and iron, the results are not biased although low concentrations of these metals were detected in the method blank. Low concentrations reported for chromium, nickel, and cobalt in samples 116517-531 may be biased high due to the detection of low concentrations of the element in the method blank.

The metals analytical reports are summarized in Appendix B (Table 3) and located in Table 3 of Appendix E along with laboratory corrective action forms.

4.5 MERCURY ANALYSIS – TISSUE

The twenty-eight tissue samples (116545-72) were received on 8 December 2003 by ERDC EPC – Vicksburg, digested on 17 December 2003, and analyzed on 23 December 2003 following SW846 method 7471A with atomic fluorescence detection using a seven level calibration curve, which had correlation coefficients of 0.999. All CCVs were within the ± 10% limits. All CCBs were below the detection limits. All quality control was within method limits as well as digestion and analysis holding times

The Mercury analytical reports are summarized in Appendix B (Table 4) and located in Table 4 of Appendix E.

BIOACCUMULATION TESTS

Materials and Methods

5.1 INTRODUCTION

At the request of the United States Army Corps of Engineers Buffalo District, ERDC Vicksburg Environmental Laboratory Environmental Processes Risk Assessment Branch (EPR) performed bioaccumulation and toxicity tests with composite sediment samples (EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5) collected from the Eighteenmile Creek. The 28-day tests were performed to measure the bioaccumulation of sediment contaminants in the benthic oligochaete *Lumbriculus variegatus*.

5.2 GENERAL TEST METHODS

Lumbriculus variegatus 28-d 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* (USEPA/USACE 1998). Contaminant whole-tissue residues in *Lumbriculus variegatus* were determined following twenty-eight-day sediment exposures. Adequate exposure conditions were maintained using an intermittent flow system for overlying water renewal.

5.3 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).

5.4 OVERLYING WATER

De-chlorinated tap water filtered through paper and carbon filters was used for culturing the organisms and in bioaccumulation tests.

5.5 TEST SEDIMENTS

The USACE-Buffalo District personnel collected sediment samples from Eighteenmile Creek on 22 October 2003. The site sediment samples were received at ERDC EPC-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. The samples labeled as EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5 and were submitted to EPR for the initiation of bioaccumulation testing. Sediment samples were stored at 4°C.

5.6 LABORATORY CONTROL SEDIMENTS

Laboratory control sediment was collected from Brown's Lake located at the Waterways Experiment Station, ERDC-Vicksburg. Surface sediment was collected using a hand shovel, placed in 5 gallon plastic buckets, and stored in a cold room at 4°C until use. Brown's Lake sediment is mainly a 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.

5.7 SEDIMENT EXPOSURE

Sediment exposures were conducted under flow-through conditions in box aquaria (31.5 x 18 x 10.5 cm). Five replicates of test and control sediments were used. The day prior to test initiation, treatment sediments were removed from cold storage and mixed for 15 minutes with a laboratory impeller mixer. Thoroughly homogenized sediments were added to each aquarium to a final thickness of 3 cm (1.7 L). A water splitter chamber delivered test water provided by an automated water delivery system to the test chambers every 12 hours (1600 ml/cycle) providing two volume exchanges per day. The sediment was allowed to settle for 24 h prior to addition of test animals under the overlying exchange regime described above. Light aeration was provided to maintain adequate dissolved oxygen concentrations.

Animals retrieved from the mass culture were transferred to cultured bowls. Clusters of test animals were removed, blotted, weighed carefully and rapidly to minimize injury and desiccation, and transferred to beakers, approximately 5-g per beaker. To initiate the bioaccumulation test, worms from each beaker (5-g) were added to each chamber. Temperature was maintained at 23±1°C. The photoperiod was maintained at 16 hours of light and 8 hours of darkness per day under cool-white fluorescent light. Light trickle aeration was maintained for the duration of the exposure period. Overlying water quality parameters (conductivity, hardness, pH, alkalinity, temperature, ammonia concentration, and dissolved oxygen concentration) were measured at test initiation and termination. Temperature and dissolved oxygen concentration were monitored daily. Total ammonia was measured twice weekly.

All water quality parameters were measured from one replicate per sediment sample for all sampling periods. At the end of the 28-day test period, test sediments were sieved through a 0.5-mm mesh screen. The material retained on the screen was transferred to a white shallow pan to facilitate separation of worms from debris. Surviving worms were transferred to clean water in glass bowls for 12 hours to depurate the contents of their guts following current recommendation (USEPA 2000). From each replicate, five worms were blotted to remove excess water, transferred to pre-weighed bead-beating vials, weighed and frozen at -20°C

for total lipids analysis. Remaining animals were collected, blotted to remove excess water, weighed to determine wet biomass, transferred to suitable glass containers, and frozen at -20°C for chemical analysis. Tissue samples were split according to the required chemical analysis (Table 2). For each replicate, target tissue wet weights for chemical analysis were 1-g for pesticides, 1-g for PCB congeners, 0.5g for metals, and 0.5g for mercury.

5.8 LIPID ANALYSIS

Pre-exposure total lipid content was determined in four replicates using culture worms archived at test initiation. Total lipid content at exposure termination was determined from a subset of worms removed from test and control sediments. Lipid analysis was conducted using the Van Handel (1985) colorimetric method developed for small invertebrates (Lotufo et al. 2000; Landrum et al. 2002). Tissue samples (five to ten whole individual worms) were homogenized in 1.5 ml of chloroform/methanol (1:1. v/v). Homogenates were transferred to 13 x 100 mm tubes and centrifuged for 10 min at 1000 g. After recording the total volume, 0.5 ml of the supernatant was transferred to a new 13 x 100 mm tube and placed in a heating block at 100°C until all the solvent had evaporated. Concentrated sulfuric acid (0.2 ml) was then added and the tubes were re-heated at 100°C for 10 min. After cooling, 4.8 ml of vanillin reagent was added. Vanillin reagent was prepared by dissolving 600 mg of vanillin in 100 mL of hot water and adding 400 ml of 85% phosphoric acid. After 5 min, samples were read in a spectrophotometer at 490 nm against a reagent blank. Lipid content was derived from a calibration line obtained using samples of 50, 100, 200, 300 and 400 µg of soybean oil and the procedure described above.

Bioaccumulation Results and Discussion

6.1 OVERLYING WATER CHARACTERISTICS

Water quality parameters measured at initiation, termination and throughout the sediment exposure are reported in Table 4. The overlying water temperature in the test chambers ranged to between 20.1 and 23.6 °C. The temperature was maintained within the required range of 23±1°C during most of the experiment. Dissolved oxygen remained above 40% saturation throughout the exposure, with concentrations ranging from 5.0 to 9.0 mg/L. The pH ranged from 7.3 to 8.3 at experiment initiation and from 7.0 to 8.5 at experiment termination. Ammonia concentrations were high at experiment initiation (1 – 2 mg/L) for the EBU-4 and EBU-5 sediments but dropped to less than 1 mg/L on the second day of exposure and remained low thereafter for all sediments. The overall range of alkalinity values was from 105 to 235 mg/L as $CaCO_3$. The overall range of hardness values was from 100 to 250 mg/L as $CaCO_3$.

Table 4. Water quality parameters in the *Lumbriculus variegatus* 28-d test.

	Temperature (°C)		D.O. (mg/L)		pH		Ammonia (mg/L)	Alkalinity (mg/L $CaCO_3$)	Hardness (mg/L $CaCO_3$)
	Min	Max	Min	Max	Min	Max			
					Day 0				
Control	20.1	20.5	6.0	8.6	8.1	8.2	<1	180	175
EBU-1	20.3	20.6	7.2	8.6	7.9	8.2	<1	110	160
EBU-2	20.0	20.6	7.4	8.7	7.8	8.1	<1	110	165
EBU-3	20.3	20.6	5.0	8.3	7.3	8.2	<1	105	145
EBU-4	20.1	20.6	7.1	8.7	7.7	8.3	1	130	170
EBU-5	20.3	20.5	6.0	8.0	7.7	8.0	2	235	250
					Day 28				
Control	23.0	23.3	7.5	8.1	7.6	8.1	1	160	100
EBU-1	23.2	23.6	8.0	8.3	7.1	8.1	1	170	145
EBU-2	23.2	23.5	8.2	8.7	7.1	8.1	<1	110	170
EBU-3	23.0	23.5	7.2	8.6	7.0	7.7	<1	120	180
EBU-4	23.0	23.5	8.0	8.6	7.2	8.3	<1	130	140
EBU-5	23.0	23.4	8.1	8.7	7.2	8.5	1	150	140
					Daily				
Control	19.7	22.6	7.0	9.1			1		
EBU-1	19.6	22.3	5.2	8.9			1		
EBU-2	19.7	22.2	6.1	8.9			<1		
EBU-3	19.8	22.1	6.2	8.9			<1		
EBU-4	19.8	21.2	5.9	9.0			<1		
EBU-5	19.8	21.6	5.1	9.0			1		

6.2 FINAL BIOMASS

Total worm biomass at exposure termination ranged from 3.0 to 9.1 g for the control and test sediments (Appendix G, Table 1). Target tissue masses for chemical analysis were obtained from all test chambers.

6.3 TOTAL LIPID CONTENT

The mean dry-to-wet-weight ratio for pre-exposure worms, measured in three replicates, was 0.164 (standard deviation = 0.03) (Appendix G, Table 3). Dry-to-wet-weight ratio of exposed worms was not determined. The lipid content (percent of wet-weight) of pre-exposed worms and worms exposed to laboratory control, EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5 sediments is reported in Appendix G, Table 2. Mean pre-exposure lipid content was 0.71 %. Mean total lipid content was similar for pre-exposed worms and control worms (0.78 %) than for those exposed to test sediments (0.96 – 1.69 %). Overall, lipid values derived

in this study were lower than values previously derived for *L. variegatus* (Table 5).

Table 5. Lipids Determined in Various Studies

Average % lipids	Wet or dry wt.	Estimated % of wet wt.*	Reference
0.6 – 0.7%	Wet		This study
0.6	Wet		Brunson et al. 1998
1.2	Wet		Pickard et al. 2001
7.7	Dry	1.3	Leppanen and Kukkonen 2000
15.0	Dry	2.6	Loonen et al. 1997
8.0	Dry	1.4	Kukkonen and Landrum 1994
12.2	Dry	2.1	Landrum et. al. 2002

Estimated using dry-to-wet wt. ratio of 0.17.

6.4 CHLORINATED PESTICIDES BIOACCUMULATION

Tissue samples from worms exposed to laboratory control sediments and test sediments EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5 were submitted to EPC for chlorinated pesticides analysis. The concentration of chlorinated pesticides was below the laboratory reporting limit (BRL) in most samples (Appendix G, Table 4). Concentrations were labeled as BRL when the concentration was lower than one-third of the reporting limit (RL). Concentrations lower than the RL but higher than the method detection limits were labeled as "J" values. For calculation of means and standard deviations of chlorinated pesticides concentrations, "J" concentrations were used unchanged and RL values (< values) were divided by three to represent the upper end of the range of the actual analyte concentration based upon method detection limits. Therefore, concentrations assigned to BRL samples are likely overestimates of the actual concentrations.

Tissue concentrations were below detection limit in all control and test sediment samples for Aldrin, A-BHC, B-BHC, D-BHC, pp-DDT, Dieldrin, B-Endosulfan, Endrin Aldehyde, Heptachlor Epoxide, Chlordane, Toxaphene, alpha Chlordane, and gamma Chlordane. For control samples, all compounds analyzed were below reporting limits except for B-Endosulfan in one replicate, Aldrin and Endosulfan Sulfate in a different replicate, and A-BHC and Endosulfan Sulfate in a third replicate. The compound pp-DDE was detected in worms exposed to all test sediments. Detectable concentrations of pp-DDT and Heptachlor were observed in some worm samples for EBU-1, EBU-2, EBU-4, and EBU-5 at concentrations typically lower than twice the RL. Detectable concentrations of A-BHC, B-BHC and Endrin were observed in worms exposed to the EBU-3 sediment only. Detectable concentrations of Endosulfan Sulfate were observed in worms exposed to the EBU-3 and EBU-4 sediments only.

6.5 PCB CONGENER BIOACCUMULATION

Tissue samples from worms exposed to laboratory control sediments and test sediments EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5 were submitted to EPC for PCB congener analysis. The concentration of PCB congeners was below the laboratory reporting limit (BRL) in several samples (Appendix G, Table 5). Concentrations were labeled as BRL when the concentration was lower than one-third of the reporting limit (RL). Concentrations lower than the RL but higher than the method detection limits were labeled as "J" values. For calculation of means and standard deviations of PCB congener concentrations, "J" concentrations were used unchanged and RL values (< values) were divided by three to represent the upper end of the range of the actual analyte concentration based upon method detection limits. Therefore, concentrations assigned to BRL samples are likely overestimates of the actual concentrations.

Tissue concentrations of all congeners except for PCB 49, PCB 52, and PCB 187 were below laboratory reporting limits in control samples. Tissue concentrations of PCB 15, PCB 18, PCB 40, PCB 44, PCB 49, PCB 52, PCB 60, PCB 77, PCB 87, PCB 97, PCB 101, PCB 103, PCB 105, PCB 118, PCB 128, PCB 138, PCB 151, and PCB 180 were above method detection limits in every sample for all test sediments. Tissue concentrations of PCBs 201, 203, and 206 were above method detection limits in most samples for all test sediments. Tissue concentrations of PCB 141, PCB 167, PCB 182, PCB 194, PCB 195, and PCB 196 were above method detection limits in only a few of the samples analyzed for all test sediments. Tissue concentrations of PCB 54, PCB 103, PCB 121, PCB 143, PCB 154, PCB 155, PCB 173, PCB 189, PCB 191, and PCB 196 were below laboratory-reporting limits in every sample for all test sediments. Tissue concentrations were not obtained for the congeners PCB 15, PCB 141, PCB 153, PCB 156, PCB 159, PCB 171 and PCB 187 for all test sediment samples.

Overall, mean tissue concentrations of PCB congeners were highest for test sediments EBU-3 and EBU-4 and lowest for EBU-5 (Appendix F, Table 5). The variation in PCB congener concentrations among replicates was typically low.

6.6 HEAVY METAL BIOACCUMULATION

Tissue samples from worms exposed to laboratory control sediments and test sediments EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5 were submitted to EPC for Target Analyte List (TAL) Metals and mercury (Hg) analysis. The concentration of some metals was below the laboratory reporting limit (BRL) in several samples (Appendix G, Table 6). Concentrations were labeled as BRL when the concentration was lower than one-third of the reporting limit (RL). For calculation of means and standard deviations of metal concentrations, RL values (< values) were divided by three to represent the upper end of the range of the actual analyte concentration based upon method detection limits. Therefore,

concentrations assigned to BRL samples are likely overestimates of the actual concentrations.

Overall, mean tissue concentrations of the metals As, Se, Ba, Mg, K, and Na, were similar for site and control sediments (Appendix F, Table 6). The mean tissue concentration of the metals Sb, Be, Cr, Cu, Pb, Ni, Ag, Tl, Zn, Al, Ba, Ca, Co, Fe, Mg. Mn, K, Na, and V were higher for test sediments than for the control sediment and were typically highest for the EBU-3 and EBU-4 sites (Appendix F, Table 6). The tissue concentration of Hg in control and test sediments was low and similar among samples except for one sample for the EBU-1 site (Appendix F, Table 6). The variation in heavy metal concentrations among replicates was typically low.

REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons (PAHs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1997. Toxicological profile for polychlorinated biphenyls. Atlanta, GA: U.S. Department of Health and Human Services.

Brunson EL, Canfield TJ, Dwyer FJ, Ingersoll CG, Kemble NE. 1998. Assessing the bioaccumulation of contaminants from sediments of the upper Mississippi River using field-collected oligochaetes and laboratory-exposed *Lumbriculus variegatus*. *Archives of Environmental Contamination and Toxicology* 35 (2): 191-201.

Kukkonen J, Landrum PF. 1994. Toxicokinetics and toxicity of sediment-associated pyrene to *Lumbriculus variegatus* (Oligochaeta). *Environmental Toxicology and Chemistry* 13 (9): 1457-1468.

Landrum PF, Gedeon ML, Burton GA, Greenberg MS, Rowland CD. 2002. Biological responses of Lumbriculus variegatus exposed to fluoranthene-spiked sediment. *Archives of Environmental Contamination and Toxicology* 42 (3): 292-302.

Leppanen MT, Kukkonen JVK. 2000. Effect of sediment-chemical contact time on availability of sediment-associated pyrene and benzo[a]pyrene to oligochaete worms and semi-permeable membrane devices. *Aquatic Toxicology* 49 (4): 227-241.

Loonen H, Muir DG, Parsons JR, Govers HJ. 1997. Bioaccumulation of polychlorinated dibenzo-p-dioxins in sediment by oligochaetes - influence of exposure pathway and contact time. *Environmental Toxicology and Chemistry* 16 (7): 1518-1525.

National Institutes of Health and National Institute of Environmental Health Sciences – Dioxin Factsheets and Pamphlets – Dioxin Research at the NIEHS
http://www.niehs.nih.gov/oc/factsheets/dioxin.htm

Pickard SW, Yaksich SM, Irvine KN, McFarland VA. 2001. Bioaccumulation potential of sediment-associated polychlorinated biphenyls (PCBs) in Ashtabula Harbor, Ohio. *Journal of Great Lakes Research* 27 (1): 44-59.

US Army Corps of Engineers & US Environmental Protection Agency. Great Lakes Dredged Material Testing and Evaluation Manual. September 1998.

US EPA: Great Lakes Eighteenmile Creek Area of Concern
http://www.epa.gov/glnpo/aoc/eighteenmile.html

US EPA (2000) Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. EPA/600/R-99064. 2nd Edition.

US EPA Office of Solid Waste: SW846 Update III December 1996.

US EPA: Pesticides
http://www.epa.gov/pesticides/

USGS Water Quality Monitoring. "General Information on Total Organic Carbon"
http://bcn.boulder.co.us/basin/data/COBWQ//info/TOC.html

Van Handel E (1985) Rapid determination of total lipids in mosquitoes. J Am Mosq Control Assoc 1:302-304.

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

Notes:

= BRL
= J Value

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

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

Notes:

= BRL
= J Value

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

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

Notes:

= BRL
= J Value

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

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

Notes:

= BRL
= J Value

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

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
Table 4
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

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	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.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

= 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:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
C = Data confirmed based upon retention time but reported from one column only due to coelution.
# = 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 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:

= 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 due to coelution.
# = 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 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

SEDIMENT & TISSUE

QA/QC SUMMARY

Eighteenmile Creek AOC - Sediment Quality Control and Matrix Spike Recovery (%) Summary

TABLE 1

Arochlor	EMC-4 MS	EMC-4 MSD	RPD	LCS	LCS	LCS Dup	RPD	Recovery Limits Low	High	RPD
PCB-1016	161	165	2.1		101	102	0.4	40	150	≤50
PCB-1221								40	150	≤50
PCB-1232								40	150	≤50
PCB-1242								40	150	≤50
PCB-1248								40	150	≤50
PCB-1254								40	150	≤50
PCB-1260	102	104	2.0		109	102	6.9	40	150	≤50
Pesticides										
Aldrin	28.1	27.6	1.6	96.6	78.3	80.2	2.5	40	150	≤50
A-BHC	35.2	37.1	5.2	85.9	67.6	72.4	6.9	40	150	≤50
B-BHC	76.6	67.0	13.3	81.3	98.4	103	4.5	40	150	≤50
G-BHC	56.5	56.5	0.0	93.3	73.8	80.1	8.2	40	150	≤50
D-BHC	37.8	38.2	0.9	95.4	111	118	6.3	40	150	≤50
PPDDD	87.4	73.9	16.7	92.7	91.0	96.4	5.8	40	150	≤50
PPDDE				91.5	94.2	89.7	4.9	40	150	≤50
PPDDT	66.9	65.9	1.4	90.6	93.4	97.8	4.5	40	150	≤50
Heptachlor	83.4	76.8	8.3	90.6	93.7	96.0	2.4	40	150	≤50
Dieldrin	57.1	59.0	3.2	85.0	87.3	89.1	2.0	40	150	≤50
A-Endosulfan								40	150	≤50
B-Endosulfan								40	150	≤50
Endosulfan sulfate	43.5	43.6	0.3	123	86.8	97.5	11.6	40	150	≤50
Endrin	43.8	35.8	20.1	80.2	85.5	87.4	2.3	40	150	≤50
Endrin Aldehyde								40	150	≤50
Heptachlor Epoxide	41.1	40.6	1.1	94.9	88.8	89.5	0.8	40	150	≤50
Methoxychlor	96.6	102	5.5	106	101	105	4.2	40	150	≤50
Chlordane								40	150	≤50
Toxaphene								40	150	≤50
Congeners										
PCB 18				89.1	94.2	82.9	12.7	40	150	≤50
PCB 31				74.1	92.4	78.9	15.8	40	150	≤50
PCB 44				77.1	85.6	75.9	12.1	40	150	≤50
PCB 49				76.3	84.9	75.3	12.0	40	150	≤50
PCB 52				81.7	91.2	81.1	11.7	40	150	≤50
PCB 77	68.0	63.3	1.8	84.0	84.1	72.6	14.7	40	150	≤50
PCB 87				97.9	97.9	89.1	9.5	40	150	≤50
PCB 105	84.0	78.1	1.8	87.1	79.0	72.7	8.3	40	150	≤50
PCB 114	89.9	98.2	2.2	90.3	77.8	70.8	9.5	40	150	≤50
PCB 118	72.2	65.1	2.6	95.7	86.1	78.6	9.1	40	150	≤50
PCB 121	80.5	81.1	0.2	99.3	88.0	79.6	10.0	40	150	≤50
PCB 128	79.3	81.1	0.6	98.4	90.1	85.0	5.8	40	150	≤50
PCB 138	75.7	67.5	2.9	97.8	89.2	82.8	7.5	40	150	≤50
PCB 141	63.3	63.3	0.0	87.3	79.5	72.9	8.7	40	150	≤50
PCB 151	91.1	84.6	1.8	90.3	80.8	73.9	8.9	40	150	≤50
PCB 170	86.4	85.8	0.2	96.9	91.5	87.1	4.9	40	150	≤50
PCB 183	81.7	79.9	0.6	100	91.0	84.7	7.2	40	150	≤50
PCB 195	91.1	87.6	1.0	87.3	83.1	82.5	0.7	40	150	≤50
PCB 206	74.0	71.0	1.0	86.1	81.1	78.3	3.6	40	150	≤50

Results based on dry weights.

Eighteenmile Creek AOC - Sediment Quality Control and Matrix Spike Recovery (%) Summary

TABLE 2

		EMC-4		EMC-4			EBU-5			EBU-5			Recovery Limits		
Metals	**Result**	**Duplicate**	**RPD**	**MS**	**LCS**	**Result**	**Duplicate**	**RPD**	**MS**	**MSD**	**RPD**	**LCS**	**Low**	**High**	**RPD**
Antimony	0.54	0.51	6.7	35.5	104								75	125	≤25
Arsenic	4.91	4.65	5.4	83.9	89.1								75	125	≤25
Barium	136	141	3.6	94.5	96.5								75	125	≤25
Beryllium	0.76	0.69	8.9	91.9	89.0								75	125	≤25
Cadmium	1.78	1.70	4.6	87.6	87.8								75	125	≤25
Cromium	101	105	3.9	85.0	99.0								75	125	≤25
Copper	150	156	3.9	102	99.0								75	125	≤25
Lead	189	202	6.6	95.0	101								75	125	≤25
Mercury						0.044	0.040	9.5	86.0	84.0	2.4	105	80	120	≤25
Nickel	72.9	76.7	5.0	86.5	92.0								75	125	≤25
Selenium	0.58	0.68	15.1	77.4	83.4								75	125	≤25
Silver	0.97	0.87	11.6	85.7	85.8								75	125	≤25
Sodium	193	181	6.4										75	125	≤25
Thallium	0.36	0.35	2.5	100	100								75	125	≤25
Zinc	674	718	6.3	110	79.4								75	125	≤25
Cobalt	13.9	13.2	5.2	94.1	101								75	125	≤25
Vanadium	27.4	26.5	3.3	99.7	99.0								75	125	≤25
Aluminum	12800	14000	9.0		73.0								75	125	≤25
Calcium	14000	13600	2.9										75	125	≤25
Iron	26500	28400	6.9		104								75	125	≤25
Magnesium	6990	6840	2.2										75	125	≤25
Manganese	376	392	4.2	104	96.6								75	125	≤25
Potassium	3800	3620	4.9										75	125	≤25
Miscellaneous							**EBU-5**								
TOC						29000	26000	10.9				104	80	120	≤25

Results based on dry weights.

Eighteenmile Creek AOC - Tissue Quality Control and Matrix Spike Recovery (%) Summary

TABLE 3

		EBU-3						Recovery Limits		
Pesticides	**MS**	**MSD**	**RPD**	**LCS**	**LCS Dup**	**RPD**	**LCS 2**	**Low**	**High**	**RPD**
Aldrin	58.0	60.0	3.4	82.5			96.5	40	150	≤50
A-BHC	56.0	57.5	2.6	68.5			77.0	40	150	≤50
B-BHC	82.0	88.5	7.6	96.5			114	40	150	≤50
G-BHC	48.6	48.8	0.4	74.0			86.0	40	150	≤50
D-BHC	27.2	46.3	52.0	70.5			90.0	40	150	≤50
PPDDD	61.5	58.5	5.0	87.5			101	40	150	≤50
PPDDE	67.5	70.0	14.0	97.5			97.7	40	150	≤50
PPDDT	64.0	65.0	1.6	83.5			96.5	40	150	≤50
Heptachlor	70.5	69.5	1.4	84.0			103	40	150	≤50
Dieldrin	50.5	53.0	4.8	83.0			95.5	40	150	≤50
A-Endosulfan								40	150	≤50
B-Endosulfan								40	150	≤50
Endosulfan sulfate				66.0			88.5	40	150	≤50
Endrin	47.9	50.5	5.3	66.0			91.0	40	150	≤50
Endrin Aldehyde								40	150	≤50
Heptachlor Epoxide	33.7	34.7	2.9	93.0			107	40	150	≤50
Methoxychlor	70.0	74.0	5.6	80.0			111	40	150	≤50
Chlordane								40	150	≤50
Toxaphene								40	150	≤50
Alpha Chlordane	65.0	67.5	3.8	91.0			107	40	150	≤50
Gamma Chlordane	62.5	66.5	6.2	90.5			107	40	150	≤50
Congeners		**EBU-2**								
PCB 18	48.7	58.8	18.8	90.0	88.0	2.2	84.5	40	150	≤50
PCB 31	56.2	68.8	20.2	85.0	79.0	7.3	79.0	40	150	≤50
PCB 44	55.5	63.0	12.7	93.0	91.5	1.6	88.0	40	150	≤50
PCB 49	57.7	54.2	6.3	91.5	89.5	2.2	86.0	40	150	≤50
PCB 52	55.8	57.6	3.2	80.5	79.0	1.9	76.5	40	150	≤50
PCB 77	83.0	80.3	3.3	114	105	8.3	121	40	150	≤50
PCB 87	88.3	96.1	8.5	118	116	1.3	119	40	150	≤50
PCB 105	74.3	72.4	2.6	96.0	95.5	0.5	96.5	40	150	≤50
PCB 114	70.6	66.1	6.6	93.0	92.5	0.5	98.5	40	150	≤50
PCB 118	71.7	78.5	9.1	101	101	0.0	105	40	150	≤50
PCB 121	77.0	80.3	4.2	107	107	0.0	108	40	150	≤50
PCB 128	83.8	71.5	15.8	93.0	91.0	2.2	69.0	40	150	≤50
PCB 138	37.0	74.5	67.3	100	99.0	1.0	105	40	150	≤50
PCB 141				95.0	93.0	2.1	106	40	150	≤50
PCB 151	64.9	69.4	6.7	91.5	90.5	1.1	92.5	40	150	≤50
PCB 183	72.8	70.0	3.9	94.0	92.0	2.2	105	40	150	≤50
PCB 187				93.5	92.0	1.6	0.0	40	150	≤50
PCB 195	66.0	61.5	7.1	87.0	86.0	1.2	87.5	40	150	≤50
PCB 206	61.5	54.5	12.1	82.0	81.0	1.2	88.5	40	150	≤50

Results based on wet weights.

Eighteenmile Creek AOC - Tissue Quality Control and Matrix Spike Recovery (%) Summary

TABLE 4

		EBU-2			EBU-2			EBU-2				Recovery Limits		
Metals	**Result**	**Duplicate***	**RPD**	**Result**	**Duplicate****	**RPD**	**MS[1]**	**MS[2]**	**LCS 1**	**LCS 2**	**Low**	**High**	**RPD**
Antimony	0.091	<0.025	114	0.091	0.081	11.2	7.44	98.3	103	107	75	125	≤25
Arsenic	1.31	1.07	25.7	1.31	1.29	1.0	5.23	97.3	100	99.9	75	125	≤25
Barium	63.6	16.5	128	63.6	61.4	3.0		90.4	102	102	75	125	≤25
Beryllium	0.05	0.06	9.4	0.054	0.050	7.3	75.0	102	98.4	98.0	75	125	≤25
Cadmium	0.313	0.336	11.7	0.313	0.308	1.7	81.0	92.4	97.0	97.8	75	125	≤25
Cromium	8.07	12.3	59.4	8.07	8.26	2.4	64.3	97.8	103	105	75	125	≤25
Copper	19.1	19.6	3.6	19.1	18.9	1.4	58.0	92.0	108	109	75	125	≤25
Lead	20.8	8.00	215	20.8	20.4	1.9		91.6	121	109	75	125	≤25
Nickel	6.92	10.5	56.2	6.92	6.72	2.8	94.9	95.8	105	101	75	125	≤25
Selenium	0.49	4.22	14.7	0.49	0.47	3.5	74.0	96.5	92.2	89.2	75	125	≤25
Silver	<0.025	<0.025	0.0	<0.025	<0.25	0.0	49.0	95.1	95.4	99.2	75	125	≤25
Sodium	616	494	19.9	616	621	0.7		101			75	125	≤25
Thallium	0.034	0.047	28.4	0.03	0.03	7.0	56.5	99.7	105	106	75	125	≤25
Zinc	96.4	134	32.3	96.4	95.7	0.7	99.2	95.8	92.2	90.6	75	125	≤25
Cobalt	1.08	1.41	37.2	1.08	1.05	2.4	87.0	97.4	105	105	75	125	≤25
Vanadium	1.91	2.38	32.6	1.91	1.88	1.7	48.1	98.4	103	106	75	125	≤25
Aluminum	462	507	9.3	462	460	0.4					75	125	≤25
Calcium	1110	1330	21.4	1110	1110	0.0		118			75	125	≤25
Iron	1840	1610	20.6	1840	1800	2.5		94.6			75	125	≤25
Magnesium	377	473	28.4	377	375	0.5		101			75	125	≤25
Manganese	26.5	32.9	27.5	26.5	25.7	2.9	124	93.8	111	107	75	125	≤25
Potassium	986	786	21.0	986	986	0.0		99.0			75	125	≤25
Miscellaneous		**EBU-1**					**EBU-1 MS**						
Mercury	0.0853	0.0848	0.6				116		104	106	80	120	≤25

Results based on wet weights.
*Pre-digest duplicate
**Post-digest duplicate
MS^1 = Pre-digest spike
MS^2=Post-digest spike

APPENDIX D

EIGHTEENMILE CREEK AOC

SEDIMENT REPORTS

CHEMISTRY RESULTS

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

Lab ID	Field Description	Units	Aldrin	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	Q	PPDDT	Heptachlor	Dieldrin	A-Endosulfan	B-Endosulfan
115074	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
115075	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
115076	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
115077	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
115078	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
115078	EMC 4 MS	ug/kg	4.91	6.16	13.4	9.89	6.62	15.3			11.7	14.6	10		
115078	EMC 4 MS spk amt	ug/kg	17.5	17.5	17.5	17.5	17.5	17.5			17.5	17.5	17.5		
115078	EMC 4 MS % REC		28.1	35.2	76.6	56.5	37.8	87.4			66.9	83.4	57.1		
115078	EMC 4 MSD	ug/kg	4.82	6.47	11.7	9.86	6.66	12.9			11.5	13.4	10.3		
115078	EMC 4 MSD spk amt	ug/kg	17.45	17.45	17.45	17.45	17.45	17.45			17.45	17.45	17.45		
115078	EMC 4 MSD % REC		27.6	37.1	67.0	56.5	38.2	73.9			65.9	76.8	59.0		
115078	EMC 4 MSD %REC RPD		1.6	5.2	13.3	0.0	0.9	16.7			1.4	8.3	3.2		
115079	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
115080	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
115081	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
115082	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
115083	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
115084	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
115085	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
115086	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
115087	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
115088	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
115089	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
115090	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
115091	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
115092	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
115093	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
BL#01	METHOD BLANK 01	ug/kg	<0.83	<0.83	<0.83	<0.83	<0.83	<1.67	<1.67		<1.67	<0.83	<1.67	<0.83	<1.67
BL#02	LCS 01	ug/kg	6.44	5.73	5.42	6.22	6.36	6.18	6.1		6.04	6.04	5.67	N/A	N/A
	LCS 01 spk amt	ug/kg	6.67	6.67	6.67	6.67	6.67	6.67	6.67		6.67	6.67	6.67		
	LCS 01 % REC		96.6	85.9	81.3	93.3	95.4	92.7	91.5		90.6	90.6	85.0		
BL#03	METHOD BLANK 02	ug/kg	<0.83	<0.83	<0.83	<0.83	<0.83	<1.67	<1.67		<1.67	<0.83	<1.67	<0.83	<1.67
BL#04	LCS 02	ug/kg	5.22	4.51	6.56	4.92	7.4	6.07	6.28		6.23	6.25	5.82	N/A	N/A
	LCS 02 spk amt		6.67	6.67	6.67	6.67	6.67	6.67	6.67		6.67	6.67	6.67		
	LCS 02 % REC		78.3	67.6	98.4	73.8	110.9	91.0	94.2		93.4	93.7	87.3		
BL#05	LCS DUP 02	ug/kg	5.35	4.83	6.86	5.34	7.88	6.43	5.98		6.52	6.4	5.94	N/A	N/A
	LCS DUP 02 spk amt	ug/kg	6.67	6.67	6.67	6.67	6.67	6.67	6.67		6.67	6.67	6.67		
	LCS DUP 02 % REC		80.2	72.4	102.8	80.1	118.1	96.4	89.7		97.8	96.0	89.1		
	LCS 02 % REC RPD		2.5	6.9	4.5	8.2	6.3	5.8	4.9		4.5	2.4	2.0		

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 Sediment Report
Table 1
Results based on dry weights.

Lab ID	Field Description	Units	Endosulfan sulfate	Endrin Aldehyde	Endrin	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene	TclXYL-S	DCLBP
115074	EMC 1	ug/kg	<2.22	<2.22	<2.22	<1.11	<11.1	<11.1	<22.2	86.8%	70.5%
115075	EMC 2	ug/kg	<3.36	<3.36	<3.36	<1.68	<16.8	<16.8	<33.6	86.8%	72.0%
115076	EMC 3	ug/kg	<4.87	<4.87	<4.87	<2.44	<24.4	<24.4	<48.8	81.0%	75.6%
115077	EBU 1	ug/kg	<3.61	<3.61	<3.61	<1.81	<18.1	<18.1	<36.2	85.9%	71.0%
115078	EMC 4	ug/kg	<4.40	<4.40	<4.40	<2.20	<22.0	<22.0	<44.4	80.7%	77.0%
115078	EMC 4 MS	ug/kg	7.61		7.67	7.19	16.9				
115078	EMC 4 MS spk amt	ug/kg	17.5		17.5	17.5	17.5				
115078	EMC 4 MS % REC		43.5		43.8	41.1	96.6			42.9%	56.5%
115078	EMC 4 MSD	ug/kg	7.61		6.25	7.09	17.8				
115078	EMC 4 MSD spk amt	ug/kg	17.45		17.45	17.45	17.45				
115078	EMC 4 MSD % REC		43.6		35.8	40.6	102.0			46.6%	54.7%
115078	EMC 4 MSD %REC RPD		0.3		20.1	1.1	5.5				
115079	EMC 5	ug/kg	<3.97	<3.97	<3.97	<1.99	<19.9	<19.9	<39.8	81.0%	76.4%
115080	EMC 6	ug/kg	<3.18	<3.18	<3.18	<1.59	<15.9	<15.9	<31.8	66.7%	68.5%
115081	EBU 2	ug/kg	<3.83	<3.83	<3.83	<1.91	<19.1	<19.1	<38.2	71.6%	72.5%
115082	EMC 7	ug/kg	<3.71	<3.71	<3.71	<1.85	<18.5	<18.5	<37.0	75.9%	67.8%
115083	EMC 8	ug/kg	<3.36	<3.36	<3.36	<1.68	<16.8	<16.8	<33.6	75.4%	102.0%
115084	EMC 9	ug/kg	4.12	<3.39	<3.39	<1.69	<16.9	<16.9	<33.8	79.0%	77.1%
115085	EBU 3	ug/kg	<3.64	<3.64	<3.64	<1.82	<18.2	<18.2	<36.4	72.3%	91.8%
115086	EMC 10	ug/kg	2.64	<3.03	<3.03	<1.52	<15.2	<15.2	<30.4	73.1%	76.2%
115087	EMC 11	ug/kg	2.46	<2.76	<2.76	<1.38	<13.8	<13.8	<27.6	75.0%	76.2%
115088	EMC 12	ug/kg	<4.88	<4.88	<4.88	<2.44	<24.4	<24.4	<48.8	77.9%	79.0%
115089	EBU 4	ug/kg	3.65	<3.52	<3.52	<1.76	<17.6	<17.6	<35.2	78.6%	77.6%
115090	EMC 13	ug/kg	<3.24	<3.24	<3.24	<1.62	<16.2	<16.2	<32.4	79.7%	76.8%
115091	EMC 14	ug/kg	<2.42	<2.42	<2.42	<1.21	<12.1	<12.1	<24.2	74.9%	78.4%
115092	EMC 15	ug/kg	2.86	<3.50	<3.50	<1.75	<17.5	<17.5	<35.0	74.5%	77.9%
115093	EBU 5	ug/kg	<2.63	<2.63	<2.63	<1.32	<13.2	<13.2	<26.4	82.5%	71.9%
BL#01	METHOD BLANK 01	ug/kg	<1.67	<1.67	<1.67	<0.83	<8.3	<8.3	<16.6	98.4%	71.0%
BL#02	LCS 01	ug/kg	8.19	N/A	5.35	6.33	7.05	N/A	N/A	92.8%	72.6%
	LCS 01 spk amt	ug/kg	6.67		6.67	6.67	6.67				
	LCS 01 % REC		122.8		80.2	94.9	105.7				
BL#03	METHOD BLANK 02	ug/kg	<1.67	<1.67	<1.67	<0.83	<8.3	<8.3	<16.6	95.7%	88.1%
BL#04	LCS 02	ug/kg	5.79	N/A	5.7	5.92	6.72	N/A	N/A	79.3%	80.1%
	LCS 02 spk amt		6.67		6.67	6.67	6.67				
	LCS 02 % REC		86.8		85.5	88.8	100.7				
BL#05	LCS DUP 02	ug/kg	6.5	N/A	5.83	5.97	7.01	N/A	N/A	82.20%	82.10%
	LCS DUP 02 spk amt	ug/kg	6.67		6.67	6.67	6.67				
	LCS DUP 02 % REC		97.5		87.4	89.5	105.1				
	LCS 02 % REC RPD		11.6		2.3	0.8	4.2				

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.

Job Description: **18 MILE CREEK BUFFALO - MELFI / KARN** Job File Number: **115074-82**

ECB Quality Assurance Corrective Action Form

Analysis: **Pesticides** Date: **14-October-03**

Analyst: **A. Morrow** Instrument: **6890**

Problem: **(1) Low Aldrin,D-BHC, and A-BHC, recoveries in 115078 matrix spike and matrix spike duplicate (MS/MSD).**
(2) Low recovery for DDE in MS/MSD at 0% and 13 %.

Sample Number(s) Affected: **(1 & 2) 115078 Matrix Spike/Matrix Spike Duplicate**

Recommended Corrective Action: **None was taken because all the other analytes were within limits. The recoveries for the laboratory control sample (LCS) were within lab quality control limits also.**

Corrective Action Taken By Analyst: **(1) Reported the data. This appears to be a matrix effect since the LCS recoveries were within limits.**
(2) The spike amount was lower than the reported value, which resulted in sporadic recoveries for DDE. Repeating the extraction would be expected to have the same results.

Comments:

Date Corrective Action Taken: **14-October-03**

Reviewed by: _____

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

Lab ID	Field Description	Units	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	TclXYL-S	DCLBP
115018	EMC 4 QA	ug/kg	<20.4	<20.4	<20.4	<20.4	718	<20.4	<20.4	75.90%	102%
115018	EMC 4 QA MS	ug/kg	339						214		
115018	EMC 4 QA MS spk amt										
115018	EMC 4 QA MS % REC	ug/kg	161.1						101.5	71.10%	107%
115018	EMC 4 QA MSD	ug/kg	336						211		
115018	EMC 4 QA MSD spk amt										
115018	EMC 4 QA MSD % REC	ug/kg	164.5						103.5	72.10%	107%
115018	EMC 4 QA MSD RPD	ug/kg	2.0884521						1.9512195		
BL#01	METHOD BLANK 01	ug/kg	<8.33	<8.33	<8.33	<8.33	<8.33	<8.33	<8.33	88.20%	98.60%
BL#02	LCS 01	ug/kg	84.6	N/A	N/A	N/A	N/A	N/A	90.7	91.50%	100%
	LCS 01 spk amt										
	LCS 01 % REC		101.4						108.8	93.6	98.8
	LCS 01 LCSD		84.8						84.6		
	LCS 01 LCSD spk amt										
	LCS 01 LCSD % REC		101.8						101.5		
	LCS 01 LCSD RPD		0.3937008						6.9424631		

Notes:

= BRL

BRL = Below Reporting Limit

Job Description: **18 MILE CREEK BUFFALO - MELFI/KARN** Job File Number: **115018**

ECB Quality Assurance Corrective Action Form

Analysis: **PCB** Date: **20-October-03**

Analyst: **A. Morrow** Instrument: **6890 GC**

Problem: **PCB 1016 spike recoveries were 161% for the matrix spike and 164% for the matrix spike duplicate.**

Sample Number(s) Affected: **115018**

Recommended Corrective Action: **Check the samples for interferring peaks or instrument intergration errors.**

Corrective Action Taken By Analyst: **The sample had interferrring peaks. The values were reported, since the sample duplicated it appears to be a matrix effect. Repeating the sample extraction will result in similar values.**

Comments: **The recoveries for PCB 1260 were 102% and 104% which are within quality control limits. The values for the laboratory control sample (LCS/LCSD) were within quality control limits for PCB 1016 and PCB 1260.**

Date Corrective Action Taken: **20-October-03**

Reviewed by: _____

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

Lab ID	Field Description	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
114792	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
114793	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
114794	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
114795	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
114796	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
114797	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
114797	EMC 4 MD RPD			7.7	9.0		3.7		8.3		8.7	8.6		20.6		1.2		
114797	EMC 4 QA MS	ug/kg														13.7		
114797	EMC 4 QA MS spk amt															16.9		
114797	EMC 4 QA MS % REC	ug/kg														68.0		
114797	EMC 4 QA MSD	ug/kg														12.9		
114797	EMC 4 QA MSD spk amt															16.9		
114797	EMC 4 QA MSD % REC	ug/kg														63.3		
114797	EMC 4 MSD RPD															1.8		
114798	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
114799	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
114800	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
114801	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
114802	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
114803	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
114804	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
114805	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
114806	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
114807	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
114808	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
114809	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
114810	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
114811	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
114812	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
BL#01	METHOD BLANK 01	ug/kg	<0.66	<0.66	<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66		<0.66
BL#02	LCS 01	ug/kg	N/A	5.94	4.94		N/A		5.14		5.09	5.45	N/A	N/A		5.6		N/A
	LCS 01 spk amt			6.67	6.67				6.67		6.67	6.67				6.67		
	LCS 01 % REC			89.1	74.1				77.1		76.3	81.7				84.0		
BL#03	METHOD BLANK 02	ug/kg	<0.66	<0.66	<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66		<0.66
BL#04	LCS 02	ug/kg	N/A	6.28	6.16		N/A		5.71		5.66	6.08	N/A	N/A		5.61		N/A
	LCS 02 spk amt			6.67	6.67				6.67		6.67	6.67				6.67		
	LCS 02 % REC			94.2	92.4				85.6		84.9	91.2				84.1		
	LCS 02 LCSD			5.53	5.26				5.06		5.02	5.41				4.84		
	LCS 02 spk amt			6.67	6.67				6.67		6.67	6.67				6.67		
	LCS 02 LCSD % REC			82.9	78.9				75.9		75.3	81.1				72.6		
	LCS 02 LCSD RPD			12.7	15.8				12.1		12.0	11.7				14.7		

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 87	PCB 97	PCB 101	PCB 103	PCB 103	PCB 105	Q	PCB 114	PCB 118	Q	PCB 121	PCB 128	PCB 129	Q
114792	EMC 1	ug/kg	NR	NR	2.4	<0.90	<0.90	0.77	C	0.45	2.28		<0.90	<0.90	<0.90	
114793	EMC 2	ug/kg	NR	NR	3.86	<1.34	<1.34	1.28	C	0.82	3.88		<1.34	0.49	<1.34	
114794	EMC 3	ug/kg	NR	NR	24.6	<1.96	<1.96	9.64	C	<1.96	21		<1.96	3.15	0.97	C
114795	EBU 1	ug/kg	NR	NR	15.4	<1.44	<1.44	5.74	C	<1.44	12.6		<1.44	1.71	<1.44	
114796	EMC 4	ug/kg	NR	NR	19.7	<1.76	<1.76	5.12	C	<1.76	15		<1.76	2	0.9	C
114797	EMC 4 QA	ug/kg	NR	NR	20.1	<1.68	<1.68	4.72	C	<1.68	15.3		<1.68	2.3	<1.68	
114797	EMC 4 MD RPD				0.5			2.0			0.5			3.5		
114797	EMC 4 QA MS	ug/kg						18.9		15.2	27.5		13.6	15.7		
114797	EMC 4 QA MS spk amt							16.9		16.9	16.9		16.9	16.9		
114797	EMC 4 QA MS % REC	ug/kg						84.0		89.9	72.2		80.5	79.3		
114797	EMC 4 QA MSD	ug/kg						17.9		16.6	26.3		13.7	16		
114797	EMC 4 QA MSD spk amt							16.9		16.9	16.9		16.9	16.9		
114797	EMC 4 QA MSD % REC	ug/kg						78.1		98.2	65.1		81.1	81.1		
114797	EMC 4 MSD RPD							1.8		2.2	2.6		0.2	0.6		
114798	EMC 5	ug/kg	NR	NR	20.9	<1.60	<1.60	7.3	C	<1.60	15.1		<1.60	<1.60	0.6	C
114799	EMC 6	ug/kg	NR	NR	13.5	<1.28	<1.28	4.35	C	<1.28	10.8		<1.28	1.45	0.43	C
114800	EBU 2	ug/kg	NR	NR	17	<1.54	<1.54	4.97	C	<1.54	12.8		<1.54	1.82	<1.54	
114801	EMC 7	ug/kg	NR	NR	5.87	<1.48	<1.48	1.91	C	<1.48	4.91	#	<1.48	0.81	<1.48	
114802	EMC 8	ug/kg	NR	NR	28.6	<1.34	<1.34	6.82	C	<1.34	22.3		<1.34	3.49	0.65	C
114803	EMC 9	ug/kg	NR	NR	14.4	<1.36	<1.36	5.49	C	<1.36	12		<1.36	1.88	<1.36	
114804	EBU 3	ug/kg	NR	NR	19.4	<1.46	<1.46	5.61	C	<1.46	16		<1.46	2.28	<1.46	
114805	EMC 10	ug/kg	NR	NR	11.7	<1.22	<1.22	3.42	C	<1.22	9.25		<1.22	1.47	0.86	C
114806	EMC 11	ug/kg	NR	NR	10.4	<1.10	<1.10	3.69	C	<1.10	8.14		<1.10	1.27	<1.10	
114807	EMC 12	ug/kg	NR	NR	30.2	<1.94	<1.94	10.6	C	<1.94	23.1		<1.94	3.96	0.9	C
114808	EBU 4	ug/kg	NR	NR	16.5	<1.40	<1.40	6.17	C	<1.40	13.4		<1.40	1.97	<1.40	
114809	EMC 13	ug/kg	NR	NR	2.9	<1.30	<1.30	1.14	C	<1.30	2.05		<1.30	<1.30	<1.30	
114810	EMC 14	ug/kg	NR	NR	7.59	<0.96	<0.96	3.1	C	0.35	6.54		<0.96	1.18	<0.96	
114811	EMC 15	ug/kg	NR	NR	13.4	<1.40	<1.40	3.16	C	<1.40	9.97		<1.40	2.04	<1.40	
114812	EBU 5	ug/kg	NR	NR	4.38	<1.06	<1.06	1.6	C	<1.06	3.27	#	<1.06	0.7	<1.06	
BL#01	METHOD BLANK 01	ug/kg	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66		<0.66	<0.66		<0.66	<0.66	<0.66	
BL#02	LCS 01	ug/kg	6.53	NR	N/A	N/A	N/A	5.81		6.02	6.38		6.62	6.56	N/A	
	LCS 01 spk amt		6.67					6.67		6.67	6.67		6.67	6.67		
	LCS 01 % REC		97.9					87.1		90.3	95.7		99.3	98.4		
BL#03	METHOD BLANK 02	ug/kg	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66		<0.66	<0.66		<0.66	<0.66	<0.66	
BL#04	LCS 02	ug/kg	6.53	N/A	N/A	N/A	N/A	5.27		5.19	5.74		5.87	6.01	N/A	
	LCS 02 spk amt		6.67					6.67		6.67	6.67		6.67	6.67		
	LCS 02 % REC		97.9					79.0		77.8	86.1		88.0	90.1		
	LCS 02 LCSD		5.94					4.85		4.72	5.24		5.31	5.67		
	LCS 02 spk amt		6.67					6.67		6.67	6.67		6.67	6.67		
	LCS 02 LCSD % REC		89.1					72.7		70.8	78.6		79.6	85.0		
	LCS 02 LCSD RPD		9.5					8.3		9.5	9.1		10.0	5.8		

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 138	Q	PCB 141	Q	PCB 143	PCB 151	Q	PCB 153	PCB 154	PCB 156	Q	PCB 159	PCB 170	PCB 171	PCB 173	Q
114792	EMC 1	ug/kg	1.42	C	<0.90		<0.90	<0.90		NR	<0.90	NR	C	NR	<0.90	NR	<0.90	
114793	EMC 2	ug/kg	2.35	C	<1.34		<1.34	<1.34		NR	<1.34	NR	C	NR	<1.34	NR	<1.34	
114794	EMC 3	ug/kg	14.3	C	<1.96		<1.96	<1.96		NR	<1.96	2.05	C	NR	<1.96	NR	<1.96	
114795	EBU 1	ug/kg	7.98	C	<1.44		<1.44	<1.44		NR	<1.44	1	C	NR	<1.44	NR	<1.44	
114796	EMC 4	ug/kg	9.55	C	<1.76		<1.76	<1.76		NR	<1.76	1.22	C	NR	<1.76	NR	<1.76	
114797	EMC 4 QA	ug/kg	9.75	C	3.67	C	<1.68	<1.68		NR	<1.68	1.31	C	NR	<1.68	NR	<1.68	
114797	EMC 4 MD RPD		0.5									1.8						
114797	EMC 4 QA MS	ug/kg	22.5		14.4			15.4							14.6			
114797	EMC 4 QA MS spk amt		16.9		16.9			16.9							16.9			
114797	EMC 4 QA MS % REC	ug/kg	75.7		63.3			91.1							86.4			
114797	EMC 4 QA MSD	ug/kg	21.2		14.4			14.3							14.5			
114797	EMC 4 QA MSD spk amt		16.9		16.9			16.9							16.9			
114797	EMC 4 QA MSD % REC	ug/kg	67.5		63.3			84.6							85.8			
114797	EMC 4 MSD RPD		2.9		0.0			1.8							0.2			
114798	EMC 5	ug/kg	14.6	C	<1.60		<1.60	<1.60		NR	<1.60	1.32	C	NR	<1.60	NR	<1.60	
114799	EMC 6	ug/kg	7.16	C	<1.28		<1.28	<1.28		NR	<1.28	0.84	C	NR	<1.28	NR	<1.28	
114800	EBU 2	ug/kg	8.56	C	<1.54		<1.54	<1.54		NR	<1.54	0.97	C	NR	<1.54	NR	<1.54	
114801	EMC 7	ug/kg	3.21	C	<1.48		<1.48	<1.48		NR	<1.48	NR	C	NR	<1.48	NR	<1.48	
114802	EMC 8	ug/kg	14.7	C	5.08	C	<1.34	<1.34		NR	<1.34	2.29	C	NR	<1.34	NR	0.46	C
114803	EMC 9	ug/kg	7.33	C	<1.36		<1.36	1.75		NR	<1.36	<1.36	C	NR	<1.36	NR	<1.36	
114804	EBU 3	ug/kg	9.89	C	<1.46		<1.46	2.58		NR	<1.46	1.37	C	NR	<1.46	NR	<1.46	
114805	EMC 10	ug/kg	6.03	C	<1.22		<1.22	<1.22		NR	<1.22	NR	C	NR	<1.22	NR	<1.22	
114806	EMC 11	ug/kg	5.22	C	<1.10		<1.10	1.27		NR	<1.10	NR	C	NR	<1.10	NR	<1.10	
114807	EMC 12	ug/kg	15.5	C	<1.94		<1.94	<1.94		NR	<1.94	1.96	C	NR	<1.94	NR	<1.94	
114808	EBU 4	ug/kg	9.11	C	<1.40		<1.40	<1.40		NR	<1.40	NR	C	NR	<1.40	NR	<1.40	
114809	EMC 13	ug/kg	1.74	C	<1.30		<1.30	<1.30		NR	<1.30	<1.30	C	NR	<1.30	NR	<1.30	
114810	EMC 14	ug/kg	5.07	C	<0.96		<0.96	0.89	C	NR	<0.96	0.71	C	NR	<0.96	NR	<0.96	
114811	EMC 15	ug/kg	8.44	C	3.93	C	<1.40	<1.40		NR	<1.40	<1.40	C	NR	<1.40	NR	<1.40	
114812	EBU 5	ug/kg	3.19	C	<1.06		<1.06	<1.06		NR	<1.06	<1.06	C	NR	<1.06	NR	<1.06	
BL#01	METHOD BLANK 01	ug/kg	<0.66		<0.66		<0.66	<0.66		<0.66	<0.66	<0.66		<0.66	<0.66	<0.66	<0.66	
BL#02	LCS 01	ug/kg	6.52		5.82		N/A	6.02		N/A	N/A	N/A		N/A	6.46	N/A	N/A	
	LCS 01 spk amt		6.67		6.67			6.67							6.67			
	LCS 01 % REC		97.8		87.3			90.3							96.9			
BL#03	METHOD BLANK 02	ug/kg	<0.66		<0.66		<0.66	<0.66		<0.66	<0.66	<0.66		<0.66	<0.66	<0.66	<0.66	
BL#04	LCS 02	ug/kg	5.95		5.3		N/A	5.39		N/A	N/A	N/A		N/A	6.1	N/A	N/A	
	LCS 02 spk amt		6.67		6.67			6.67							6.67			
	LCS 02 % REC		89.2		79.5			80.8							91.5			
	LCS 02 LCSD		5.52		4.86			4.93							5.81			
	LCS 02 spk amt		6.67		6.67			6.67							6.67			
	LCS 02 LCSD % REC		82.8		72.9			73.9							87.1			
	LCS 02 LCSD RPD		7.5		8.7			8.9							4.9			

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 180	PCB 182	Q	PCB 183	Q	PCB 185	Q	PCB 187	Q	PCB 189	PCB 191	PCB 194	PCB 195	Q	PCB 196	Q
114792	EMC 1	ug/kg	<0.90	<0.90		<0.90		<0.90		0.45	C	<0.90	<0.90	<0.90	<0.90		<0.90	
114793	EMC 2	ug/kg	<1.34	<1.34		<1.34		<1.34		0.83	C	<1.34	<1.34	<1.34	<1.34		<1.34	
114794	EMC 3	ug/kg	<1.96	<1.96		1.37	C	0.86	C	4.43	C	<1.96	<1.96	0.91	1.11	C	<1.97	
114795	EBU 1	ug/kg	<1.44	<1.44		0.89	C	0.71	C	2.37	C	<1.44	<1.44	<1.44	0.63	C	<1.44	
114796	EMC 4	ug/kg	<1.76	<1.76		1.1	C	2	C	3.35	C	<1.76	<1.76	<1.76	0.91	C	<1.76	
114797	EMC 4 QA	ug/kg	<1.68	<1.68		1.2	C	0.84	C	3.37	C	<1.68	<1.68	1.47	1.1	C	<1.68	
114797	EMC 4 MD RPD					2.2		20.4		0.1					4.7			
114797	EMC 4 QA MS	ug/kg				15									16.5			
114797	EMC 4 QA MS spk amt					16.9									16.9			
114797	EMC 4 QA MS % REC	ug/kg				81.7									91.1			
114797	EMC 4 QA MSD	ug/kg				14.7									15.9			
114797	EMC 4 QA MSD spk amt					16.9									16.9			
114797	EMC 4 QA MSD % REC	ug/kg				79.9									87.6			
114797	EMC 4 MSD RPD					0.6									1.0			
114798	EMC 5	ug/kg	<1.60	<1.60		1.14	C	0.9	C	5.67	C	<1.60	<1.60	1.15	0.78	C	0.59	C
114799	EMC 6	ug/kg	<1.28	<1.28		0.69	C	0.61	C	2.19	C	<1.28	<1.28	<1.28	0.57	C	0.44	C
114800	EBU 2	ug/kg	<1.54	<1.54		0.87	C	0.82	C	2.89	C	<1.54	<1.54	0.75	0.69	C	<1.54	
114801	EMC 7	ug/kg	<1.48	<1.48		<1.48		<1.48		1.07	C	<1.48	<1.48	<1.48	<1.48		<1.48	
114802	EMC 8	ug/kg	9.06	4.82	C	1.47		3.49	C	5.27	C	<1.34	<1.34	1.98	2.32	C	0.77	C
114803	EMC 9	ug/kg	<1.36	<1.36		0.72	C	<1.36		2.12	C	<1.36	<1.36	<1.36	0.59	C	<1.36	
114804	EBU 3	ug/kg	<1.46	<1.46		1.15	C	0.74	C	2.9	C	<1.46	<1.46	<1.46	0.91	C	0.61	C
114805	EMC 10	ug/kg	<1.22	<1.22		0.62	C	0.69	C	<1.22		<1.22	<1.22	<1.22	0.53	C	0.5	C
114806	EMC 11	ug/kg	<1.10	<1.10		0.57	C	0.47	C	1.42	C	<1.10	<1.10	0.57	0.38	C	<1.10	
114807	EMC 12	ug/kg	<1.94	<1.94		1.51	C	0.92	C	3.36	C	<1.94	<1.94	1.49	0.87	C	0.65	C
114808	EBU 4	ug/kg	<1.40	<1.40		0.71	C	1.36	C	2.89	C	<1.40	<1.40	<1.40	0.89	C	0.59	C
114809	EMC 13	ug/kg	<1.30	<1.30		<1.30		<1.30		<1.30		<1.30	<1.30	<1.30	<1.30		<1.30	
114810	EMC 14	ug/kg	<0.96	<0.96		0.34	C	<0.96		0.79	C	<0.96	<0.96	<0.96	<0.96		<0.96	
114811	EMC 15	ug/kg	<1.40	3.78	C	0.89	C	1.15	C	4.44	C	<1.40	<1.40	<1.40	<1.40		<1.40	
114812	EBU 5	ug/kg	<1.06	2.26	C	<1.06		<1.06		1.07	C	<1.06	<1.06	<1.06	0.41	C	<1.06	
BL#01	METHOD BLANK 01	ug/kg	<0.66	<0.66		<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66	
BL#02	LCS 01	ug/kg	N/A	N/A		6.68		N/A		N/A		N/A	N/A	N/A	5.82		N/A	
	LCS 01 spk amt					6.67									6.67			
	LCS 01 % REC					100.1									87.3			
BL#03	METHOD BLANK 02	ug/kg	<0.66	<0.66		<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66	
BL#04	LCS 02	ug/kg	N/A	N/A		6.07		N/A		N/A		N/A	N/A	N/A	5.54		N/A	
	LCS 02 spk amt					6.67									6.67			
	LCS 02 % REC					91.0									83.1			
	LCS 02 LCSD					5.65									5.5			
	LCS 02 spk amt					6.67									6.67			
	LCS 02 LCSD % REC					84.7									82.5			
	LCS 02 LCSD RPD					7.2									0.7			

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

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

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

Lab ID	Field Description	Units	PCB 199	PCB 201	Q	PCB 202	Q	PCB 203	Q	PCB 205	PCB 206	PCB 207	PCB 208	Q	PCB 155	TMX
114792	EMC 1	ug/kg	<0.90	<0.90		<0.90		<0.90		<0.90	<0.90	<0.90	<0.90		<0.90	77.7%
114793	EMC 2	ug/kg	<1.34	<1.34		<1.34		<1.34		<1.34	<1.34	<1.34	0.46	C	<1.34	78.3%
114794	EMC 3	ug/kg	<1.97	2.12		<1.97		0.86	C	<1.97	<1.97	<1.97	1.57	C	<1.97	81.9%
114795	EBU 1	ug/kg	<1.44	0.96		<1.44		<1.44		<1.44	<1.44	<1.44	0.86	C	<1.44	89.2%
114796	EMC 4	ug/kg	<1.76	1.47		<1.76		0.74	C	<1.76	<1.76	<1.76	1.66	C	<1.76	71.9%
114797	EMC 4 QA	ug/kg	<1.68	1.9		<1.68		0.73	C	<1.68	2.64	<1.68	2.02	C	<1.68	110%
114797	EMC 4 MD RPD			6.4				0.3					4.9			
114797	EMC 4 QA MS	ug/kg									15.1					
114797	EMC 4 QA MS spk amt										16.9					
114797	EMC 4 QA MS % REC	ug/kg									74					90.9%
114797	EMC 4 QA MSD	ug/kg									14.6					
114797	EMC 4 QA MSD spk amt										16.9					
114797	EMC 4 QA MSD % REC	ug/kg									71					63.9%
114797	EMC 4 MSD RPD										1.0					
114798	EMC 5	ug/kg	<1.60	1.26	C	<1.60		0.76	C	<1.60	<1.60	<1.60	1.14	C	<1.60	67.6%
114799	EMC 6	ug/kg	<1.28	1.06	C	<1.28		<1.28		<1.28	<1.28	<1.28	1.11	C	<1.28	65.1%
114800	EBU 2	ug/kg	<1.54	1.23	C	<1.54		<1.54		<1.54	<1.54	<1.54	1.34	C	<1.54	61.5%
114801	EMC 7	ug/kg	<1.48	<1.48		<1.48		<1.48		<1.48	<1.48	<1.48	<1.48		<1.48	58.8%
114802	EMC 8	ug/kg	<1.34	2.78		0.89	C	1.33	C	<1.34	8.12	1.88	3.95	C	<1.34	87.6%
114803	EMC 9	ug/kg	<1.36	<1.36		0.85	C	<1.36		<1.36	<1.36	<1.36	<1.36		<1.36	71.7%
114804	EBU 3	ug/kg	<1.46	1.81		<1.46		1.11	C	<1.46	<1.46	2.4	<1.46		<1.46	68.9%
114805	EMC 10	ug/kg	<1.22	1	C	<1.22		<1.22		<1.22	<1.31	<1.22	1.31	C	<1.22	98.7%
114806	EMC 11	ug/kg	<1.10	0.63	C	<1.10		<1.10		<1.10	0.83	<1.10	<1.10		<1.10	67.8%
114807	EMC 12	ug/kg	<1.94	1.46	C	<1.94		0.83	C	<1.94	<1.94	<1.94	1.45	C	<1.94	98.4%
114808	EBU 4	ug/kg	0.74	<1.40		<1.40		0.68	C	<1.40	<1.40	<1.40	1.49	C	<1.40	99.6%
114809	EMC 13	ug/kg	<1.30	<1.30		<1.30		<1.30		<1.30	<1.30	<1.30	0.52	C	<1.30	74.8%
114810	EMC 14	ug/kg	<0.96	<0.96		<0.96		<0.96		<0.96	<0.96	1.44	0.48	C	<0.96	71.1%
114811	EMC 15	ug/kg	<1.40	3.36	C	<1.40		1.12	C	<1.40	<1.40	<1.40	3.72	C	<1.40	76.5%
114812	EBU 5	ug/kg	<1.06	<1.06		<1.06		<1.06		<1.06	<1.06	<1.06	0.72	C	<1.06	79.3%
BL#01	METHOD BLANK 01	ug/kg	<0.66	<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66	73.0%
BL#02	LCS 01	ug/kg	N/A	N/A		N/A		N/A		N/A	5.74	N/A	N/A		N/A	79.9%
	LCS 01 spk amt										6.67					
	LCS 01 % REC										86.1					
BL#03	METHOD BLANK 02	ug/kg	<0.66	<0.66		<0.66		<0.66		<0.66	<0.66	<0.66	<0.66		<0.66	88.8%
BL#04	LCS 02	ug/kg	N/A	N/A		N/A		N/A		N/A	5.41	N/A	N/A		N/A	85.3%
	LCS 02 spk amt										6.67					
	LCS 02 % REC										81.1					
	LCS 02 LCSD										5.22					78.0%
	LCS 02 spk amt										6.67					
	LCS 02 LCSD % REC										78.3					
	LCS 02 LCSD RPD										3.6					

Notes:

= BRL
= J Value

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

Job Description: **18 MILE CREEK BUFFALO - MELFI / KARN** Job File Number: **114792**

ECB Quality Assurance Corrective Action Form

Analysis: **Congeners** Date: **1-October-03**

Analyst: **A. Harrison** Instrument: **GC 92**

Problem: **No MS/MSD data reported for congeners 18,31,44,49,and 52.**

Sample Number(s) Affected: **114797 MS & MSD**

Recommended Corrective Action:

Corrective Action Taken By Analyst: **Sample concentration is significantly higher than spike amount. Therefore recoveries could not be calculated for these congeners.**

Comments: **All other quality control is within acceptable limits.**

Date Corrective Action Taken: **1-October-03**

Reviewed by:

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

Lab ID	Field Description	Units	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL	ZN
114848	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
114849	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
114850	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
114851	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
114852	EMC 4	mg/kg	0.543	4.91	0.755	1.78	101	150	189	72.9	0.582	0.973	0.361	674
114852	EMC 4 MS	mg/kg	35.97	13.3	5.35	6.16	118	201	284	90.2	4.45	5.26	5.36	784
114852	EMC 4 MS spk amt	mg/kg	99.78	10.00	5.00	5.00	20.00	50	100	20.00	5.00	5.00	5.00	100
114852	EMC 4 MS % REC		35.5	83.9	91.9	87.6	85.0	102.0	95.0	86.5	77.4	85.7	100.0	110.0
114852	EMC 4 MD	mg/kg	0.508	4.65	0.691	1.7	105	156	202	76.663	0.677	0.866	0.352	718
114852	EMC 4 MD RPD	mg/kg	6.7	5.4	8.9	4.6	3.9	3.9	6.6	5.0	15.1	11.6	2.5	6.3
114853	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
114854	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
114855	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
114856	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
114857	EMC 8	mg/kg	0.743	5.05	0.635	2.46	187	245	321	172	0.508	0.977	0.371	1350
114858	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
114859	EBU 3	mg/kg	0.56	3.75	0.598	1.52	109	157	203	20.5	3.53	0.618	0.288	800
114860	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
114861	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
114862	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
114863	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
114864	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
114865	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
114866	EMC 15	mg/kg	0.739	5.6	0.678	1.62	867	179	322	71.3	0.304	0.621	0.189	776
114867	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
BL#01	METHOD BLANK 01	mg/kg	<0.05	<0.050	<0.050	<0.020	0.267	0.059	0.694	0.056	<0.050	<0.050	<0.050	3.3
BL#02	LCS 01	mg/kg	104	8.91	4.45	4.39	19.8	19.8	10.1	18.4	4.17	4.29	5.01	79.4
	LCS 01 spk amt	mg/kg	100	10.00	5.00	5.00	20.00	20.00	10.00	20.00	5.00	5.00	5.00	100.00
	LCS 01 % REC		104	89.1	89.0	87.8	99.0	99.0	101.0	92.0	83.4	85.8	100.2	79.4
BL#03	EXTERNAL QC 01	mg/kg	1.54	13.2	0.773	0.272	72.6	27.4	12.3	66	1.18	0.46	0.31	86.3
	EQC 01 Leach Value **		NR	NR	NR	NR	79.00	32.00	13.00	78.00	NR	NR	NR	100.00
	EQC 01 % REC						91.9	85.6	94.6	84.6				86.3

** = Nist 2709

Notes:

= BRL

BRL = Below Reporting Limit

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

Lab ID	Field Description	Units	AL	BA	CA	CO	FE	MG	MN	K	NA	V
114848	EMC 1	mg/kg	3700	32.4	30900	3.58	8720	4200	447	866	106	7.8
114849	EMC 2	mg/kg	8780	92.3	18000	9.38	17900	6250	386	2820	234	22.4
114850	EMC 3	mg/kg	15250	158	14000	13	30100	7450	629	4010	243	29.3
114851	EBU 1	mg/kg	10800	113	20000	8.77	21200	6270	535	2700	187	20.8
114852	EMC 4	mg/kg	12800	136	14000	13.9	26500	6990	376	3800	193	27.4
114852	EMC 4 MS	mg/kg		514		32.7			480			46.7
114852	EMC 4 MS spk amt	mg/kg	N/A	400	N/A	20.00	N/A	N/A	100	N/A	N/A	20.00
114852	EMC 4 MS % REC			94.5		94.1			104			99.7
114852	EMC 4 MD	mg/kg	14000	141	13600	13.2	28400	6840	392	3620	181	26.5
114852	EMC 4 MD RPD	mg/kg	9.0	3.6	2.9	5.2	6.9	2.2	4.2	4.9	6.4	3.3
114853	EMC 5	mg/kg	10900	124	13400	11.7	23600	6320	369	3350	178	23.6
114854	EMC 6	mg/kg	11700	125	15100	11.3	24500	6680	405	3520	165	24.1
114855	EBU 2	mg/kg	12800	137	14300	12.1	25900	6820	409	3570	180	25.3
114856	EMC 7	mg/kg	11400	88.2	6500	11.6	23400	6730	379	3600	155	25.1
114857	EMC 8	mg/kg	11200	145	10900	16.8	27000	6220	508	3380	164	24.6
114858	EMC 9	mg/kg	12800	135	18100	12.8	26200	6470	486	3390	163	23.4
114859	EBU 3	mg/kg	11600	122	10400	13.9	25400	6380	475	3440	158	24.5
114860	EMC 10	mg/kg	11600	105	16800	13.3	24600	6450	400	3820	153	23.2
114861	EMC 11	mg/kg	11400	99.2	16900	12.4	24400	6270	425	3490	175	23.2
114862	EMC 12	mg/kg	13300	151	21000	12.6	28500	7480	624	4290	303	31.4
114863	EBU 4	mg/kg	12800	122	19200	12.3	27600	6410	517	3710	186	23.5
114864	EMC 13	mg/kg	10400	50.6	59200	9.4	21300	5950	313	3420	653	22.5
114865	EMC 14	mg/kg	11000	85.7	31700	11.7	88400	6970	705	3550	397	23.2
114866	EMC 15	mg/kg	10900	108	11000	11.4	24400	7200	320	2820	191	32.9
114867	EBU 5	mg/kg	10700	65.8	12900	11.8	23400	6770	440	3500	463	20.5
BL#01	METHOD BLANK 01	mg/kg	16.9	<0.100	<20.00	0.33	15.9	3.07	<0.100	<1.00	4.66	<0.050
BL#02	LCS 01	mg/kg	292	386	N/A	20.2	207	N/A	96.6	N/A	N/A	19.8
	LCS 01 spk amt	mg/kg	400	400		20.0	200		100			20
	LCS 01 % REC		73	96.5		101.0	103.5		96.6			99
BL#03	EXTERNAL QC 01	mg/kg	21100	394	13700	11.4	30900	13500	466	4040	657	71.2
	EQC 01 Leach Value **		26000.00	398.00	15000	12.0	30000	14000	470.00	3200	680.00	62
	EQC 01 % REC		81.2	99.0	91.3	95.0	103	96.4286	99.1489	126.3	96.6176	114.84

** = Nist 2709

Notes:

= BRL

BRL = Below Reporting Limit

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

Lab ID	Field Description	Units	HG	TOC
114828	EMC 1	mg/kg	0.09	11000
114829	EMC 2	mg/kg	0.15	32000
114830	EMC 3	mg/kg	0.35	47000
114831	EBU 1	mg/kg	0.17	33000
114832	EMC 4	mg/kg	0.47	45000
114833	EMC 5	mg/kg	0.36	44000
114834	EMC 6	mg/kg	0.23	30000
114835	EBU 2	mg/kg	0.33	39000
114836	EMC 7	mg/kg	0.25	35000
114837	EMC 8	mg/kg	0.56	36000
114838	EMC 9	mg/kg	0.16	30000
114839	EBU 3	mg/kg	0.37	36000
114840	EMC 10	mg/kg	0.22	24000
114841	EMC 11	mg/kg	0.12	32000
114842	EMC 12	mg/kg	0.18	48000
114843	EBU 4	mg/kg	0.17	31000
114844	EMC 13	mg/kg	0.022	32000
114845	EMC 14	mg/kg	0.027	18000
114846	EMC 15	mg/kg	0.23	45000
114847	EBU 5	mg/kg	0.044	29000
114847	EBU 5 MS	mg/kg	0.22	
114847	EBU 5 MS spk amt	mg/kg	0.20	
114847	EBU 5 MS % REC		86	
114847	EBU 5 MD	mg/kg	0.04	26000
114847	EBU 5 MD RPD		9.5238	10.9091
114847	EBU 5 MSD	mg/kg	0.21	
114847	EBU 5 MSD spk amt	mg/kg	0.20	
114847	EBU 5 MSD %REC		84	
114847	EBU 5 %REC RPD	mg/kg	2.4	
BL#01	METHOD BLANK 01	mg/kg	<0.005	<250
BL#02	LCS 01	mg/kg	0.21	26000
	LCS 01 spk amt	mg/kg	0.20	25000
	LCS 01 % REC		105	104
BL#03	EXTERNAL QC 01	mg/kg	N/A	N/A

Notes:

= BRL

BRL = Below Reporting Limit

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

Lab ID	Field Description	STL Sample ID	Units	2378-TCDD	Q	Total TCDD	Q	12378-PeCDD	Q	Total PeCDD	Q	123478-HxCDD	Q	123789-HxCDD	Q
114813	EMC1	M030925-001	pg/g	ND		1.7		ND		1.4	Q	ND		ND	
114814	EMC2	M030925-002	pg/g	ND		2.9		ND		2.9	Q	ND		ND	
	EMC2 MS			103				96	B			96		99	
	EMC2 MSD			95				96	B			92		94	
	EMC2 RPD			7.3				0.5				3.6		5.4	
114815	EMC3	M030925-003	pg/g	ND		2.7	Q	ND		3.2	Q	ND		ND	
114816	EMC4	M030925-004	pg/g	ND		8.4	Q	0.71	B	11	QB	0.7	Q	1.8	
114817	EMC5	M030925-005	pg/g	ND		2.1		ND		4.2	Q	0.49	Q	0.8	Q
114818	EMC6	M030925-006	pg/g	ND		1.3		ND		2	Q	0.35	Q	0.6	Q
114819	EMC7	M030925-007	pg/g	ND		ND		ND		1	Q	ND		ND	
114820	EMC8	M030925-008	pg/g	0.6	Q	10	Q	0.94	QB	17	QB	1.9		4.6	Q
114821	EMC9	M030925-009	pg/g	ND		5.6	Q	ND		6.3	Q	0.66	Q	1.7	
114822	EMC10	M030925-010	pg/g	0.72	Q	11	Q	0.46	B	11	QB	1.3	Q	3.3	
114823	EMC11	M030925-011	pg/g	ND		1.4		ND		2.3	Q	ND		ND	
114824	EMC12	M030925-012	pg/g	ND		11	Q	ND		18	Q	1.2	Q	3	Q
114825	EMC13	M030925-013	pg/g	ND		1.1	Q	ND		0.77	Q	ND		ND	
114826	EMC14	M030925-014	pg/g	ND		1.1	Q	ND		1.2	Q	ND		ND	
114827	EMC15	M030925-015	pg/g	ND		12	Q	ND		21	Q	3.1		8.1	
BL#01	METHOD BLANK 01			ND		ND		0.26		0.26		ND		ND	
BL#02	LCS 01			99				100	B			93		97	

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 Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	123678-HxCDD	Q	123789-HxCDD	Q	Total HxCDD	Q	1234678-HpCDD	Q	Total HpCDD	Q	OCDD	Q
114813	EMC1	M030925-001	pg/g	0.63	Q	ND		4.6	QS	16	B	36	B	140	B
114814	EMC2	M030925-002	pg/g	1.7	Q	ND		15	Q	46		100		500	B
	EMC2 MS			100		99				95				95	B
	EMC2 MSD			96		94				83				57	B
	EMC2 RPD			4.3		5.4				10				20	
114815	EMC3	M030925-003	pg/g	1.6		ND		12		23		48		220	B
114816	EMC4	M030925-004	pg/g	5.7		1.8		52	Q	110		220		1100	B
114817	EMC5	M030925-005	pg/g	1.9	Q	0.8	Q	18	Q	43		82		390	B
114818	EMC6	M030925-006	pg/g	1.5		0.6	Q	13	Q	25		50		220	B
114819	EMC7	M030925-007	pg/g	0.9		ND		7.7	Q	11		23		110	B
114820	EMC8	M030925-008	pg/g	14		4.6	Q	100	Q	250		520		2500	B
114821	EMC9	M030925-009	pg/g	3.8		1.7		36	Q	76		160		760	B
114822	EMC10	M030925-010	pg/g	9.8		3.3		69	Q	190		400		1800	B
114823	EMC11	M030925-011	pg/g	1.9		ND		14		42		86		440	B
114824	EMC12	M030925-012	pg/g	7.5		3	Q	63	Q	140		280		1400	B
114825	EMC13	M030925-013	pg/g	ND		ND		3.7	Q	7.7		15		74	B
114826	EMC14	M030925-014	pg/g	0.88		ND		7.5		17		37		180	B
114827	EMC15	M030925-015	pg/g	20		8.1		140	Q	320		640		2800	B
BL#01	METHOD BLANK 01			ND		ND		ND		ND		ND		0.76	
BL#02	LCS 01			101		97				92				92	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 - Dioxin Sediment Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	2378-TCDF	Q	Total-TCDF	Q	12378-PeCDF	Q	23478-PeCDF	Q	Total PeCDF	Q	123478-HxCDF	Q
114813	EMC1	M030925-001	pg/g	1.5	Q	23	Q	ND		0.53	Q	4.9	Q	1	
114814	EMC2	M030925-002	pg/g	2.7	Q	51	Q	0.65	Q	1	QB	16	QB	4	QB
	EMC2 MS			100				104		98	B			95	QB
	EMC2 MSD			97				104		96	B			93	QB
	EMC2 RPD			3.2				0.15		1.8				2.4	
114815	EMC3	M030925-003	pg/g	3.1	Q	35	Q	ND		ND		7.4	Q	2.9	QB
114816	EMC4	M030925-004	pg/g	3.6	Q	62	Q	1.4		1.8	B	38	QB	12	QB
114817	EMC5	M030925-005	pg/g	2.8	Q	33	Q	ND		0.78	QB	12	QB	3.7	QB
114818	EMC6	M030925-006	pg/g	1.6	Q	24	Q	0.38	Q	0.44	QB	9.8	QB	2.9	QB
114819	EMC7	M030925-007	pg/g	1.5	Q	8	Q	ND		ND		0.89	Q	1.1	QB
114820	EMC8	M030925-008	pg/g	5	Q	69	Q	1.9	Q	2.5	B	68	QB	23	QB
114821	EMC9	M030925-009	pg/g	3		66	Q	0.89	Q	1.1	QB	24	QB	6.3	QB
114822	EMC10	M030925-010	pg/g	5.2		79	Q	1.1	Q	1.4	QB	47	QB	13	QB
114823	EMC11	M030925-011	pg/g	1.8	Q	43	Q	0.33	Q	0.65	QB	13	QB	3.7	QB
114824	EMC12	M030925-012	pg/g	6.9	Q	120	Q	2.1	Q	2.2	B	45	QB	15	QB
114825	EMC13	M030925-013	pg/g	ND		2		ND		ND		2.1	Q	0.8	B
114826	EMC14	M030925-014	pg/g	1.3		18	Q	ND		ND		5.5	Q	2	QB
114827	EMC15	M030925-015	pg/g	4.1	Q	110	Q	2.8		4.1	B	150	QB	11	B
BL#01	METHOD BLANK 01			ND		ND		ND		0.12	Q	0.12	Q	0.16	Q
BL#02	LCS 01			95				102		99	B			95	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 - Dioxin Sediment Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	123678-HxCDF	Q	234678-HxCDF	Q	123789-HxCDF	Q	Total HxCDF	Q	1234678-HpCDF	Q
114813	EMC1	M030925-001	pg/g	0.3	Q	ND		ND		8.3	QS	8.8	
114814	EMC2	M030925-002	pg/g	1.2	B	1.7	Q	ND		30	QB	24	QB
	EMC2 MS			95	B	94		92				94	B
	EMC2 MSD			90	B	92		87				92	B
	EMC2 RPD			5.2		1.7		5.3				1.6	
114815	EMC3	M030925-003	pg/g	0.89	B	ND		ND		16	QB	17	QB
114816	EMC4	M030925-004	pg/g	4.4	QB	2	Q	ND		85	QSB	82	B
114817	EMC5	M030925-005	pg/g	1.2	QB	ND		ND		31	QSB	32	B
114818	EMC6	M030925-006	pg/g	0.74	QB	0.63	Q	ND		19	QSB	19	B
114819	EMC7	M030925-007	pg/g	0.59	QB	ND		ND		9.7	QB	8.5	QB
114820	EMC8	M030925-008	pg/g	9.8	B	3.6	Q	ND		200	QSB	230	B
114821	EMC9	M030925-009	pg/g	2.5	B	1.2		ND		51	QSB	59	B
114822	EMC10	M030925-010	pg/g	4.6	B	1.8	Q	ND		130	QSB	130	B
114823	EMC11	M030925-011	pg/g	1	B	0.64	Q	ND		26	QB	24	B
114824	EMC12	M030925-012	pg/g	3.7	QB	2.1	Q	ND		89	QSB	91	B
114825	EMC13	M030925-013	pg/g	ND		ND		ND		4.1	QB	4.3	QB
114826	EMC14	M030925-014	pg/g	0.62	QB	ND		ND		12	QB	12	B
114827	EMC15	M030925-015	pg/g	15	B	5.8	Q	ND		360	QB	370	B
BL#01	METHOD BLANK 01			0.067	Q	ND		ND		0.22	QB	0.25	Q
BL#02	LCS 01			95	B	94		91				91	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 - Dioxin Sediment Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	1234789-HpCDF	Q	Total HpCDF	Q	OCDF	Q	13C-2378-TCDD	13C-12378-PeCDD	13C-123478-HxCDD
114813	EMC1	M030925-001	pg/g	0.48		20		14	B	83	88	83
114814	EMC2	M030925-002	pg/g	ND		63	Q	13	B	65	70	68
	EMC2 MS			95				40	Ab	80	87	77
	EMC2 MSD			87				41	Ab	82	86	79
	EMC2 RPD			7.9				3.1				
114815	EMC3	M030925-003	pg/g	ND		40	QB	11	B	78	88	79
114816	EMC4	M030925-004	pg/g	3.1		200	QB	27	B	75	82	75
114817	EMC5	M030925-005	pg/g	1.4	Q	80	BQ	18	B	72	77	71
114818	EMC6	M030925-006	pg/g	1.1		44	QB	11	B	77	89	77
114819	EMC7	M030925-007	pg/g	1.2		23	QB	8.2	B	66	76	68
114820	EMC8	M030925-008	pg/g	9		550	QB	200	B	75	81	74
114821	EMC9	M030925-009	pg/g	2.2		140	QB	43	B	78	88	76
114822	EMC10	M030925-010	pg/g	6		340	QB	23	B	82	92	79
114823	EMC11	M030925-011	pg/g	1.2		62	QB	33	B	77	84	77
114824	EMC12	M030925-012	pg/g	4.4		220	QB	23	B	89	99	89
114825	EMC13	M030925-013	pg/g	ND		9.9	QB	4.7	B	77	90	79
114826	EMC14	M030925-014	pg/g	ND		29	QB	14	B	76	84	70
114827	EMC15	M030925-015	pg/g	12		810	QB	140	B	70	65	68
BL#01	METHOD BLANK 01			ND		0.25	Q	0.45	Q	79	82	82
BL#02	LCS 01			95				86	B	76	79	79

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 Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	13C-123678-HxCDD	13C-1234678-HpCDD	13C-OCDD	Q	13C-2378-TCDF	13C-12378-PECDF	13C-23478-PeCDF
114813	EMC1	M030925-001	pg/g	78	73	59		85	82	82
114814	EMC2	M030925-002	pg/g	62	65	52		61	63	58
	EMC2 MS			69	80	70		77	75	78
	EMC2 MSD			73	75	58		79	75	78
	EMC2 RPD									
114815	EMC3	M030925-003	pg/g	69	82	75		76	75	80
114816	EMC4	M030925-004	pg/g	68	75	62		73	71	73
114817	EMC5	M030925-005	pg/g	65	68	51		71	67	69
114818	EMC6	M030925-006	pg/g	69	80	73		75	78	81
114819	EMC7	M030925-007	pg/g	60	75	72		63	67	70
114820	EMC8	M030925-008	pg/g	66	76	68		74	71	73
114821	EMC9	M030925-009	pg/g	70	79	74		74	76	80
114822	EMC10	M030925-010	pg/g	71	80	68		82	80	85
114823	EMC11	M030925-011	pg/g	70	72	56		75	74	78
114824	EMC12	M030925-012	pg/g	77	87	79		84	84	89
114825	EMC13	M030925-013	pg/g	70	85	79		73	75	80
114826	EMC14	M030925-014	pg/g	65	75	67		70	71	75
114827	EMC15	M030925-015	pg/g	62	55	38	*	68	57	57
BL#01	METHOD BLANK 01			73	82	68		76	70	73
BL#02	LCS 01			70	74	61		73	72	72

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 Report
Table 6
Results based on dry weights.

Lab ID	Field Description	STL Sample ID	Units	13C-123478-HxCDF	13C-123678-HxCDF	13C-234678-HxCDF	13C-123789-HxCDF	13c-1234678-HpCDF	13c-1234789-HpCDF
114813	EMC1	M030925-001	pg/g	82	81	79	80	73	76
114814	EMC2	M030925-002	pg/g	67	65	56	63	53	45
	EMC2 MS			72	68	69	72	60	61
	EMC2 MSD			75	71	71	75	57	58
	EMC2 RPD								
114815	EMC3	M030925-003	pg/g	73	68	69	73	64	67
114816	EMC4	M030925-004	pg/g	69	66	67	67	53	50
114817	EMC5	M030925-005	pg/g	67	64	63	65	52	51
114818	EMC6	M030925-006	pg/g	73	69	70	73	62	66
114819	EMC7	M030925-007	pg/g	63	60	60	67	62	71
114820	EMC8	M030925-008	pg/g	72	66	67	73	63	72
114821	EMC9	M030925-009	pg/g	73	68	71	75	64	71
114822	EMC10	M030925-010	pg/g	73	68	74	71	56	45
114823	EMC11	M030925-011	pg/g	73	71	73	76	60	65
114824	EMC12	M030925-012	pg/g	76	73	77	79	63	56
114825	EMC13	M030925-013	pg/g	71	70	70	77	67	82
114826	EMC14	M030925-014	pg/g	67	63	63	70	62	73
114827	EMC15	M030925-015	pg/g	67	62	64	65	47	44
BL#01	METHOD BLANK 01			78	72	74	79	67	79
BL#02	LCS 01			77	72	72	76	67	71

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 Report
Table 7

Lab ID	Sample ID	% Gravel	% Sand	% Fines
114787	EBU-1	0.4	50.9	48.7
114788	EBU-2	0.0	31.3	68.8
114789	EBU-3	1.2	31.3	67.5
114790	EBU-4	1.5	50.0	48.6
114791	EBU-5	39.6	40.9	19.5

APPENDIX E

EIGHTEENMILE CREEK AOC

TISSUE REPORTS

CHEMISTRY RESULTS

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

Lab ID	Field Description	Units	Aldrin	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	Q	PPDDT	Heptachlor	Dieldrin
116461	CONTROL -1	ug/kg	<2.17	<2.17	<2.17	<2.17	<2.17	<4.34	<4.34		<4.34	<2.17	<4.34
116462	CONTROL-2	ug/kg	1.49	<2.09	<2.09	<2.09	<2.09	<4.18	<4.18		<4.18	<2.09	<4.18
116463	CONTROL-3	ug/kg	<2.49	4.41	<2.49	<2.49	<2.49	<4.98	<4.98		<4.98	<2.49	<4.98
116464	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
116465	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
116466	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
116467	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
116468	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
116469	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
116470	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
116471	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
116472	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
116473	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
116474	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
116475	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
116475	EBU3 2-1 MS	ug/kg	21.6	20.8	30.5	18	10.1	22.9	25.1		23.8	22.2	18.8
116475	EBU3 2-1 MS spk amt	ug/kg	37.2	37.2	37.2	37.2	37.2	37.2	37.2		37.2	37.2	37.2
116475	EBU3 2-1 MS % REC		58	56	82	48.6	27.2	61.5	67.5		64	70.5	50.5
116475	EBU3 2-1 MSD	ug/kg	22.3	21.2	32.8	18	17.1	21.6	25.9		24	25.8	19.6
116475	EBU3 2-1 MSD spk amt	ug/kg	37	37	37	37	37	37	37		37	37	37
116475	EBU3 2-1 MSD % REC		60	57.5	88.5	48.8	46.3	58.5	70		65	69.5	53
116475	EBU3 2-1 MSD RPD		3.4	2.6	7.6	0.4	52.0	5.0	14.0		1.6	1.4	4.8

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 Report
Table 1
Results based on wet weights.

Lab ID	Field Description	Units	Aldrin	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	Q	PPDDT	Heptachlor	Dieldrin
116476	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
116477	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
116478	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
116479	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
116480	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
116481	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
116482	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
116483	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
116484	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
116485	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
116486	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
116487	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
116488	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
BL#01	METHOD BLANK 01(61-75)	ug/kg	<2.50	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00		<5.00	<2.50	<5.00
BL#02	LCS 01	ug/kg	16.5	13.7	19.3	14.8	14.1	17.5	17.4		16.7	16.8	16.6
	LCS 01 spk amt	ug/kg	20	20	20	20	20	20	20		20	20	20
	LCS 01 % REC		82.5	68.5	96.5	74	70.5	87.5	97.5		83.5	84	83
BL#03	METHOD BLANK 02(76-88)	ug/kg	<2.50	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00		<5.00	<2.50	<5.00
BL#04	LCS 02	ug/kg	19.3	15.4	22.8	17.2	18	20.2	21.1		19.3	20.6	19.1
	LCS 02 spk amt	ug/kg	20	20	20	20	20	20	20		20	20	20
	LCS 02 %REC		96.5	77	114	86	90	101	97.7		96.5	103	95.5

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 Report
Table 1
Results based on wet weights.

Lab ID	Field Description	Units	A-Endosulfan	B-Endosulfan	Endosulfan sulfate	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane
116461	CONTROL -1	ug/kg	<2.17	2.23	<4.34	<4.34	8.78	<2.17	<21.7	<21.7
116462	CONTROL-2	ug/kg	<2.09	<4.18	7.35	<4.18	<4.18	<2.09	<20.9	<20.9
116463	CONTROL-3	ug/kg	<2.49	<4.98	14.7	<4.98	<4.98	<2.49	<24.9	<24.9
116464	EBU1 1-1	ug/kg	<1.92	<3.84	<3.84	<3.84	<3.84	<1.92	<19.2	<19.2
116465	EBU1 1-2	ug/kg	<2.30	<4.60	<4.60	<4.60	<4.60	<2.30	<23.0	<23.0
116466	EBU1 1-3	ug/kg	<1.81	<3.63	<3.63	<3.63	<3.63	<1.81	<18.1	<18.1
116467	EBU1 1-4	ug/kg	<1.47	<2.94	<2.94	<2.94	<2.94	<1.47	<14.7	<14.7
116468	EBU1 1-5	ug/kg	<2.04	<4.08	<4.08	<4.08	<4.08	<2.04	<20.4	<20.4
116469	EBU2 1-1	ug/kg	<2.40	<4.80	<4.80	<4.80	<4.80	<2.40	<24.0	<24.0
116470	EBU2 2-1	ug/kg	<2.36	<4.73	<4.73	<4.73	<4.73	<2.36	<23.6	<23.6
116471	EBU2 3-1	ug/kg	<1.63	<3.26	<3.26	<3.26	<3.26	<1.63	<16.3	<16.3
116472	EBU2 4-1	ug/kg	<2.34	<4.67	<4.67	<4.67	<4.67	<2.34	<23.4	<23.4
116473	EBU2 5-1	ug/kg	<2.24	<4.48	<4.48	<4.48	<4.48	<2.24	<22.4	<22.4
116474	EBU3 1-1	ug/kg	<2.46	<4.91	<4.91	<4.91	<4.91	<2.46	<24.6	<24.6
116475	EBU3 2-1	ug/kg	<2.46	<4.93	7.63	<4.93	<4.93	<2.46	<24.6	<24.6
116475	EBU3 2-1 MS	ug/kg				17.8		12.5	25.9	
116475	EBU3 2-1 MS spk amt	ug/kg				37.2		37.2	37.2	
116475	EBU3 2-1 MS % REC					47.9		33.7	70	
116475	EBU3 2-1 MSD	ug/kg				18.6		12.8	27.3	
116475	EBU3 2-1 MSD spk amt	ug/kg				37		37	37	
116475	EBU3 2-1 MSD % REC					50.5		34.7	74	
116475	EBU3 2-1 MSD RPD					5.3		2.9	5.6	

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 Report
Table 1
Results based on wet weights.

Lab ID	Field Description	Units	A-Endosulfan	B-Endosulfan	Endosulfan sulfate	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane
116476	EBU3 3-1	ug/kg	<2.15	<4.30	<4.30	<4.30	<4.30	<2.15	<21.5	<21.5
116477	EBU3 4-1	ug/kg	<2.21	<4.42	10.5	<4.42	<4.42	<2.21	<22.1	<22.1
116478	EBU3 5-1	ug/kg	<1.87	<3.73	12.7	1.95	<3.73	<1.87	<18.7	<18.7
116479	EBU4 1-1	ug/kg	<1.86	<3.72	<3.72	<3.72	<3.72	<1.86	<18.6	<18.6
116480	EBU4 2-1	ug/kg	<1.76	<3.52	10.3	<3.52	<3.52	<1.76	<17.6	<17.6
116481	EBU4 3-1	ug/kg	<1.82	<3.63	<3.63	<3.63	<3.63	<1.82	<18.2	<18.2
116482	EBU4 4-1	ug/kg	<2.13	<4.26	3.27	<4.26	<4.26	<2.13	<21.3	<21.3
116483	EBU4 5-1	ug/kg	<2.36	<4.71	<4.71	<4.71	<4.71	<2.36	<23.6	<23.6
116484	EBU5 1-1	ug/kg	<2.50	<5.00	<5.00	<5.00	<5.00	<2.50	<25.0	<25.0
116485	EBU5 2-1	ug/kg	<2.37	<4.73	<4.73	<4.73	<4.73	<2.37	<23.7	<23.7
116486	EBU5 3-1	ug/kg	<2.23	<4.46	<4.46	<4.46	<4.46	<2.23	<22.3	<22.3
116487	EBU5 4-1	ug/kg	<2.42	<4.83	<4.83	<4.83	<4.83	<2.42	<24.2	<24.2
116488	EBU5 5-1	ug/kg	<2.34	<4.68	<4.68	<4.68	<4.68	<2.34	<23.4	<23.4
BL#01	METHOD BLANK 01(61-75)	ug/kg	<2.50	<5.00	<5.00	<5.00	<5.00	<2.50	<25.0	<25.0
BL#02	LCS 01	ug/kg	N/A	N/A	13.2	13.2	N/A	18.6	16	N/A
	LCS 01 spk amt	ug/kg			20	20		20	20	
	LCS 01 % REC				66	66		93	80	
BL#03	METHOD BLANK 02(76-88)	ug/kg	<2.50	<5.00	<5.00	<5.00	<5.00	<2.50	<25.0	<25.0
BL#04	LCS 02	ug/kg	N/A	N/A	17.7	18.2	N/A	21.4	22.2	N/A
	LCS 02 spk amt	ug/kg			20	20		20	20	
	LCS 02 %REC				88.5	91		107	111	

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 Report
Table 1
Results based on wet weights.

Lab ID	Field Description	Units	Toxaphene	Alpha Chlordane	Gamma Chlordane	TclXYL-S	DCLBP
116461	CONTROL -1	ug/kg	<43.4	<2.17	<2.17	83.8%	66.6%
116462	CONTROL-2	ug/kg	<41.8	<2.09	<2.09	85.8%	64.9%
116463	CONTROL-3	ug/kg	<49.8	<2.49	<2.49	64.5%	54.6%
116464	EBU1 1-1	ug/kg	<38.4	<1.92	<1.92	67.6%	60.2%
116465	EBU1 1-2	ug/kg	<46.0	<2.30	7	76.0%	66.5%
116466	EBU1 1-3	ug/kg	<36.3	<1.81	<1.81	64.9%	54.5%
116467	EBU1 1-4	ug/kg	<29.4	<1.47	<1.47	87.6%	71.0%
116468	EBU1 1-5	ug/kg	<40.8	<2.04	<2.04	76.4%	67.7%
116469	EBU2 1-1	ug/kg	<48.0	<2.40	<2.40	72.6%	65.4%
116470	EBU2 2-1	ug/kg	<47.3	<2.36	5.37	84.5%	68.7%
116471	EBU2 3-1	ug/kg	<32.6	<1.63	<1.63	92.1%	77.9%
116472	EBU2 4-1	ug/kg	<46.7	<2.34	<2.34	90.5%	72.1%
116473	EBU2 5-1	ug/kg	<44.8	<2.24	<2.24	65.2%	46.2%
116474	EBU3 1-1	ug/kg	<49.1	<2.46	8.55	81.2%	68.3%
116475	EBU3 2-1	ug/kg	<49.3	<2.46	8.96	97.4%	90.5%
116475	EBU3 2-1 MS	ug/kg		24.2	23.2		
116475	EBU3 2-1 MS spk amt	ug/kg		37.2	37.2		
116475	EBU3 2-1 MS % REC			65	62.5	69.1%	62.9%
116475	EBU3 2-1 MSD	ug/kg		25	24.5		
116475	EBU3 2-1 MSD spk amt	ug/kg		37	37		
116475	EBU3 2-1 MSD % REC			67.5	66.5	72.0%	63.9%
116475	EBU3 2-1 MSD RPD			3.8	6.2		

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 Report
Table 1
Results based on wet weights.

Lab ID	Field Description	Units	Toxaphene	Alpha Chlordane	Gamma Chlordane	TclXYL-S	DCLBP
116476	EBU3 3-1	ug/kg	<43.0	<2.15	<2.15	74.4%	61.0%
116477	EBU3 4-1	ug/kg	<44.2	<2.21	<2.21	80.6%	70.2%
116478	EBU3 5-1	ug/kg	<37.3	<1.87	<1.87	74.5%	65.5%
116479	EBU4 1-1	ug/kg	<37.2	<1.86	6.35	76.1%	59.7%
116480	EBU4 2-1	ug/kg	<35.2	<1.76	5.61	58.3%	38.2%
116481	EBU4 3-1	ug/kg	<36.3	<1.82	7.83	70.3%	50.3%
116482	EBU4 4-1	ug/kg	<42.6	<2.13	10.4	72.1%	62.2%
116483	EBU4 5-1	ug/kg	<47.1	<2.36	9.96	83.8%	73.1%
116484	EBU5 1-1	ug/kg	<50.0	<2.50	<2.50	81.9%	77.9%
116485	EBU5 2-1	ug/kg	<47.3	<2.37	<2.37	85.1%	78.8%
116486	EBU5 3-1	ug/kg	<44.6	<2.23	<2.23	90.6%	79.5%
116487	EBU5 4-1	ug/kg	<48.3	<2.42	<2.42	90.3%	69.2%
116488	EBU5 5-1	ug/kg	<46.8	<2.34	<2.34	86.7%	79.9%
BL#01	METHOD BLANK 01(61-75)	ug/kg	<50.0	<2.50	<2.50	104%	93.3%
BL#02	LCS 01	ug/kg	N/A	18.2	18.1	102%	86.8%
	LCS 01 spk amt	ug/kg		20	20		
	LCS 01 % REC			91	90.5		
BL#03	METHOD BLANK 02(76-88)	ug/kg	<50.0	<2.50	<2.50	111%	102%
BL#04	LCS 02	ug/kg	N/A	21.4	21.3	111%	103%
	LCS 02 spk amt	ug/kg		20	20		
	LCS 02 %REC			107	107		

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.

Job Description: **18 Mile Creek Bio Buffalo - Lotufo/Karn** Job File Number: **116461**

ECB Quality Assurance Corrective Action Form

Analysis: **Pesticides** Date: **29-December-03**

Analyst: **Morrow** Instrument:

Problem: **1. Low D-BHC recovery for 116475 Matrix Spike of 27.2 percent; method recovery limits are 40- 140 percent.**
2. Endosulfan sulfate recovery after substracting the sample amount - 116475 is 7.63 ppb, matrix spike is 6.52 ppm and Matrix Spike Duplicate is 6.63 ppb
3. Low decachlorobiphenyl recovery.

Sample Number(s) Affected: **1&2) 116475 MS and 116475 MSD**
3) 116481

Recommended Corrective Action:

Corrective Action Taken By Analyst: **With the exception of items 1-3, all other quality control was within control limits.**

Comments: **# indicates a RPD greater than 40 percent between primary and confiramtion column.**

Date Corrective Action Taken: **29-December-03**

Reviewed by:

Job Description: **18 Mile Creek Bio Buffalo - Lotufo/Karn** Job File Number: **116461**

ECB Quality Assurance Corrective Action Form

Analysis: **Pesticide** Date: **12-January-04**

Analyst: **Morrow** Instrument: **GC #83**

Problem: **More than 40 percent RPD between primary and confirmation columns.**

Sample Number(s) Affected: **116466, 116468-116475, 116477-116487**

Recommended Corrective Action:

Corrective Action Taken By Analyst: **An apparent interference is on the confirmation column. Reported the values from the primary column.**

Comments:

Date Corrective Action Taken: **12-January-04**

Reviewed by:

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

Lab ID	Field Description	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
116489	CONTROL-1	ug/kg	<0.95	<0.95		<0.95		<0.95		<0.95		<0.95	1.62	<1.90	<1.90		<0.95	
116490	CONTROL-2	ug/kg	<1.00	<1.00		<1.00		<1.00		<1.00		0.58	1.04	<2.00	<2.00		<1.00	
116491	CONTROL-3	ug/kg	<0.96	<0.96		<0.96		<0.96		<0.96		<0.96	<0.96	<1.92	<1.92		<0.96	
116492	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
116493	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
116494	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
116495	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
116496	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
116497	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
116497	EBU2 1-1MS	ug/kg		19.6		25.2				24.4		29.1	16.7				22.9	
116497	EBU2 1-1MS Spike Amt			26.5		26.5				26.5		26.5	26.5				26.5	
116497	EBU2 1-1MS % REC			48.7		56.2				55.5		57.7	55.8				83	
116497	EBU2 1-1MSD			26.1		33				30.5		31.7	35.7				27.4	
116497	EBU2 1-1MSD Spike Amt			33		33				33		33	33				33	
116497	EBU2 1-1MSD % REC			58.8		68.8				63		54.2	57.6				80.3	
116497	EBU2 1-1MSD RPD			18.8		20.2				12.7		6.3	3.2				3.3	
116498	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
116499	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
116500	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
116501	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
116502	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
116503	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
116504	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
116505	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
116506	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

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	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
116507	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
116508	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
116509	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
116510	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
116511	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
116512	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
116513	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
116514	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
116515	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
116516	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
BL#01	METHOD BLANK 01 (116489-116503)	ug/kg	<1.00	<1.00		<1.00		<1.00		<1.00		<1.00	<1.0	<2.00	<2.00		<1.00	
BL#02	LCS 01 (116489-116503)	ug/kg	N/A	18		17		N/A		18.6		18.3	16.1	N/A	N/A		22.7	
BL#02	LCS 01 (116489-116503) Spk Amt			20		20				20		20	20				20	
BL#02	LCS 01 (116489-116503) % REC			90		85				93		91.5	80.5				113.5	
BL#02	LCSD 01 (116489-116503) Dupl			17.6		15.8				18.3		17.9	15.8				20.9	
BL#02	LCSD 01 (116489-116503) Spk Amt			20		20				20		20	20				20	
BL#02	LCSD 01 (116489-116503) % REC			88		79				91.5		89.5	79				104.5	
BL#02	LCSD 01 (116489-116503) RPD			2.25		7.32				1.6		2.2	1.9				8.3	
BL#03	METHOD BLANK 02 (116504-116516)	ug/kg	<1.00	<1.00		<1.00		<1.00		<1.00		<1.00	<1.00	<2.00	<2.00		<1.00	
BL#04	LCS 02 (116504-116516)	ug/kg	N/A	16.9		15.8		N/A		17.6		17.2	15.3	N/A	N/A		24.2	
BL#04	LCS 02 (116504-116516) Spk Amt			20		20				20		20	20				20	
BL#04	LCS 02 (116504-116516) % REC			84.5		79				88		86	76.5				121	

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

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

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

Lab ID	Field Description	Units	PCB 86	PCB 87	Q	PCB 97	Q	PCB 101	PCB 103	PCB 105	Q	PCB 114	PCB 118	Q	PCB 121	PCB 128	Q	PCB 129	Q
116489	CONTROL-1	ug/kg	N/A	<0.95		<0.95		<0.95	<0.95	<0.95		<0.95	<0.95		<0.95	<0.95		<1.90	
116490	CONTROL-2	ug/kg	N/A	<1.00		<1.00		<1.00	<1.00	<1.00		<1.00	<1.00		<1.00	<1.00		<2.00	
116491	CONTROL-3	ug/kg	N/A	<0.96		<0.96		<0.96	<0.96	<0.96		<0.96	<0.96		<0.96	<0.96		<1.92	
116492	EBU1 1-1	ug/kg	N/A	5.16	C	3.84	C	11.6	<0.86	3.07	C	<0.86	5.75		<0.86	0.89	#	<1.72	
116493	EBU1 1-2	ug/kg	N/A	10.8	C	7.57	C	19.1	<0.99	5.93	C	<0.99	10.5	#	<0.99	1.86		<1.98	
116494	EBU1 1-3	ug/kg	N/A	5.55	C	4.11	C	10.7	<0.62	3.32	C	<0.62	6.14	#	<0.62	0.84	#	<1.24	
116495	EBU1 1-4	ug/kg	N/A	7.15	C	5.34	C	14.8	<0.59	4.32	C	<0.59	7.32		<0.59	1.49		<1.18	
116496	EBU1 1-5	ug/kg	N/A	5.41	C	4.06	C	9.89	<0.92	3.22	C	<0.92	5.77		<0.92	0.88	#	<1.84	
116497	EBU2 1-1	ug/kg	N/A	4.27	C	3.68	C	7.77	<0.99	2.64	C	<0.99	4.06	#	<0.99	0.73	#	<1.98	
116497	EBU2 1-1MS	ug/kg		27.7						22.3		18.7	23.1		20.4	22.9			
116497	EBU2 1-1MS Spike Amt			26.5						26.5		26.5	26.5		26.5	26.5			
116497	EBU2 1-1MS % REC			88.3						74.3		70.6	71.7		77	83.8			
116497	EBU2 1-1MSD			36						26.5		21.8	30		26.5	24.3			
116497	EBU2 1-1MSD Spike Amt			33						33		33	33		33	33			
116497	EBU2 1-1MSD % REC			96.1						72.4		66.1	78.5		80.3	71.5			
116497	EBU2 1-1MSD RPD			8.5						2.6		6.6	9.1		4.2	15.8			
116498	EBU2 2-1	ug/kg	N/A	5.38	C	4.56	C	11.2	<0.93	2.93	C	<0.93	5.26	#	<0.93	1.08		<1.86	
116499	EBU2 3-1	ug/kg	N/A	3.95	C	3.94	C	11.3	<0.94	2.6	C	<0.94	4.9		<0.94	0.68	#	<1.88	
116500	EBU2 4-1	ug/kg	N/A	5.99	C	5.23	C	15.5	<0.93	3.99	C	<0.93	6.87	#	<0.93	1.13		<1.86	
116501	EBU2 5-1	ug/kg	N/A	4.67	C	4.09	C	7.09	<0.99	2.74	C	<0.99	6.07		<0.99	1.05		<1.98	
116502	EBU3 1-1	ug/kg	N/A	6.32	C	5.98	C	16.8	<0.85	3.88	C	0.78	9.39		<0.85	1.29		<1.70	
116503	EBU3 2-1	ug/kg	N/A	5.58	C	5.96	C	15	<0.73	3.49	C	<0.73	9.4		<0.73	1.22		<1.46	
116504	EBU3 3-1	ug/kg	N/A	7.19	C	6.88	C	17.6	<0.95	4.28	C	<0.95	11.7		<0.95	1.58		<1.90	
116505	EBU3 4-1	ug/kg	N/A	5.97	C	5.84	C	15.8	<0.73	3.93	C	<0.73	9.87		<0.73	1.65		<1.46	
116506	EBU3 5-1	ug/kg	N/A	5.69	C	5.63	C	16.2	<0.85	3.68	C	<0.85	9.12		<0.85	1.28		<1.70	

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

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

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

Lab ID	Field Description	Units	PCB 86	PCB 87	Q	PCB 97	Q	PCB 101	PCB 103	PCB 105	Q	PCB 114	PCB 118	Q	PCB 121	PCB 128	Q	PCB 129	Q
116507	EBU4 1-1	ug/kg	N/A	6.96	C	5.26	C	16.1	<0.56	4.59	C	<0.56	8.57		<0.56	1.3		0.55	C
116508	EBU4 2-1	ug/kg	N/A	8.24	C	6.17	C	17	<0.71	4.79	C	<0.71	10.9		<0.71	1.28		<1.42	
116509	EBU4 3-1	ug/kg	N/A	6.93	C	5.07	C	14.1	<0.99	4.14	C	<0.99	8.06		<0.99	1.05		<1.98	
116510	EBU4 4-1	ug/kg	N/A	8.54	C	6.97	C	18.4	<0.99	4.97	C	<0.99	8.68	#	<0.99	1.79		<1.98	
116511	EBU4 5-1	ug/kg	N/A	8.6	C	6.75	C	20.2	<1.00	5.23	C	<1.00	8.93	#	<1.00	1.54		<2.00	
116512	EBU5 1-1	ug/kg	N/A	4.89	C	3.69	C	8.9	<1.00	3.14	C	<1.00	4.03	#	<1.00	1.04		<2.00	
116513	EBU5 2-1	ug/kg	N/A	4.53	C	3.51	C	9.15	<1.00	3.22	C	<1.00	3.1	#	<1.00	1		<2.00	
116514	EBU5 3-1	ug/kg	N/A	5.04	C	3.75	C	10.1	<0.93	3.21	C	<0.93	4.42	#	<0.93	1.02		<1.86	
116515	EBU5 4-1	ug/kg	N/A	4.97	C	3.75	C	9.93	<0.97	3.59	C	<0.97	4.13	#	<0.97	1.04		<1.94	
116516	EBU5 5-1	ug/kg	N/A	5.15	C	4.26	C	12.1	<0.99	3.42	C	<0.99	4.52	#	<0.99	1.14		<1.98	
BL#01	METHOD BLANK 01 (116489-116503)	ug/kg	<1.00	<1.00		<1.00		<1.00	<1.00	<1.00		<1.00	<1.00		<1.00	<1.00		<2.00	
BL#02	LCS 01 (116489-116503)	ug/kg	N/A	23.5		N/A		N/A	N/A	19.2		18.6	20.1		21.4	18.6		N/A	
BL#02	LCS 01 (116489-116503) Spk Amt			20						20		20	20		20	20			
BL#02	LCS 01 (116489-116503) % REC			117.5						96		93	100.5		107	93			
BL#02	LCSD 01 (116489-116503) Dupl			23.2						19.1		18.5	20.1		21.4	18.2			
BL#02	LCSD 01 (116489-116503) Spk Amt			20						20		20	20		20	20			
BL#02	LCSD 01 (116489-116503) % REC			116						95.5		92.5	100.5		107	91			
BL#02	LCSD 01 (116489-116503) RPD			1.3						0.5		0.5	0.0		0.0	2.2			
BL#03	METHOD BLANK 02 (116504-116516)	ug/kg	<1.00	<1.00		<1.00		<1.00	<1.00	<1.00		<1.00	<1.00		<1.00	<1.00		<2.00	
BL#04	LCS 02 (116504-116516)	ug/kg	N/A	23.7		N/A		N/A	N/A	19.3		19.7	21		21.6	13.8		N/A	
BL#04	LCS 02 (116504-116516) Spk Amt			20						20		20	20		20	20		20	
BL#04	LCS 02 (116504-116516) % REC			118.5						96.5		98.5	105		108	69			

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 138	Q	PCB 141	Q	PCB 143	PCB 151	Q	PCB 153	PCB 154	PCB 156	PCB 159	PCB 167	PCB 171	PCB 173	PCB 180	Q
116489	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	
116490	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	
116491	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	<.96	
116492	EBU1 1-1	ug/kg	6.68	C	NR		<0.86	1.65	#	NR	<0.86	NR	NR	<0.86	NR	<0.86	1.03	#
116493	EBU1 1-2	ug/kg	14.1	C	NR		<0.99	3.51		NR	<0.99	NR	NR	<0.99	NR	<0.99	1.77	#
116494	EBU1 1-3	ug/kg	6.59	C	NR		<0.62	1.39		NR	<0.62	NR	NR	<0.62	NR	<0.62	1.14	#
116495	EBU1 1-4	ug/kg	8.85	C	NR		<0.59	2.2	#	NR	<0.59	NR	NR	<0.59	NR	<0.59	1.47	C #
116496	EBU1 1-5	ug/kg	7.29	C	NR		<0.92	1.65	#	NR	<0.92	NR	NR	<0.92	NR	<0.92	1.31	C #
116497	EBU2 1-1	ug/kg	7.3	C	NR		<0.99	1.57	#	NR	<0.99	NR	NR	<0.99	NR	<.99	0.79	
116497	EBU2 1-1MS	ug/kg	17.1					18.8										
116497	EBU2 1-1MS Spike Amt		26.5					26.5										
116497	EBU2 1-1MS % REC		37					64.9										
116497	EBU2 1-1MSD		31.9					24.5										
116497	EBU2 1-1MSD Spike Amt		33					33										
116497	EBU2 1-1MSD % REC		74.5					69.4										
116497	EBU2 1-1MSD RPD		67.3					6.7										
116498	EBU2 2-1	ug/kg	8.31	C	NR		<0.93	2.04		NR	<0.93	NR	NR	<0.93	NR	<0.93	0.85	C
116499	EBU2 3-1	ug/kg	6.52	C	NR		<0.94	1.6		NR	<0.94	NR	NR	<0.94	NR	<0.94	0.89	C
116500	EBU2 4-1	ug/kg	9.84	C	NR		<0.93	2.44		NR	<0.93	NR	NR	<0.93	NR	<0.93	1.07	C #
116501	EBU2 5-1	ug/kg	9.36	C	NR		<0.99	2.37	#	NR	<0.99	NR	NR	<0.99	NR	<0.99	4.61	C
116502	EBU3 1-1	ug/kg	11	C	NR		<0.85	3.24		NR	<0.85	NR	NR	<0.85	NR	<0.85	1.6	C
116503	EBU3 2-1	ug/kg	8.13	C	NR		<0.73	2.96	#	NR	<0.73	NR	NR	<0.73	NR	<0.73	1.09	C
116504	EBU3 3-1	ug/kg	10.2	C	NR		<0.95	3.41	#	NR	<0.95	NR	NR	<0.95	NR	<0.95	1.57	C
116505	EBU3 4-1	ug/kg	9.06	C	NR		<0.73	2.68	#	NR	<0.73	NR	NR	<0.73	NR	<0.73	1.21	C
116506	EBU3 5-1	ug/kg	9.3	C	NR		<0.85	3.66	#	NR	<0.85	NR	NR	<0.85	NR	<0.85	0.9	C

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 138	Q	PCB 141	Q	PCB 143	PCB 151	Q	PCB 153	PCB 154	PCB 156	PCB 159	PCB 167	PCB 171	PCB 173	PCB 180	Q
116507	EBU4 1-1	ug/kg	8.2	C	NR		<0.56	2.47	#	NR	<0.56	NR	NR	0.65	NR	<0.56	2.38	#
116508	EBU4 2-1	ug/kg	8.92	C	NR		<0.71	2.51	#	NR	<0.71	NR	NR	0.6	NR	<0.71	1.64	#
116509	EBU4 3-1	ug/kg	8.45	C	NR		<0.99	1.94	#	NR	<0.99	NR	NR	0.67	NR	<0.99	1.53	#
116510	EBU4 4-1	ug/kg	11.7	C	NR		<0.99	2.93	#	NR	<0.99	NR	NR	0.56	NR	<0.99	1.8	#
116511	EBU4 5-1	ug/kg	12.2	C	NR		<1.00	2.88	#	NR	<1.00	NR	NR	0.59	NR	<1.00	1.62	#
116512	EBU5 1-1	ug/kg	9.84	C	NR		<1.00	2.26	#	NR	<1.00	NR	NR	0.4	NR	<1.00	1.06	#
116513	EBU5 2-1	ug/kg	9.23	C	NR		<1.00	2.23	#	NR	<1.00	NR	NR	<1.00	NR	<1.00	1.69	#
116514	EBU5 3-1	ug/kg	5.58	C	NR		<0.93	1.81	#	NR	<0.93	NR	NR	<0.93	NR	<0.93	1.02	#
116515	EBU5 4-1	ug/kg	9.25	C	NR		<0.97	1.82	#	NR	<0.97	NR	NR	<0.97	NR	<0.97	1.12	#
116516	EBU5 5-1	ug/kg	9.74	C	NR		<0.99	2.16	#	NR	<0.99	NR	NR	<0.99	NR	<0.99	0.95	#
BL#01	METHOD BLANK 01 (116489-116503)	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	
BL#02	LCS 01 (116489-116503)	ug/kg	20		19		N/A	18.3		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
BL#02	LCS 01 (116489-116503) Spk Amt		20		20			20										
BL#02	LCS 01 (116489-116503) % REC		100		95			91.5										
BL#02	LCSD 01 (116489-116503) Dupl		19.8		18.6			18.1										
BL#02	LCSD 01 (116489-116503) Spk Amt		20		20			20										
BL#02	LCSD 01 (116489-116503) % REC		99		93			90.5										
BL#02	LCSD 01 (116489-116503) RPD		1.0		2.1			1.1										
BL#03	METHOD BLANK 02 (116504-116516)	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	
BL#04	LCS 02 (116504-116516)	ug/kg	20.9		21.1		N/A	18.5		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
BL#04	LCS 02 (116504-116516) Spk Amt		20		20			20										
BL#04	LCS 02 (116504-116516) % REC		104.5		105.5			92.5										

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

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

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

Lab ID	Field Description	Units	PCB 182	Q	PCB 183	Q	PCB 185	Q	PCB 187	PCB 189	PCB 191	PCB 194	PCB 195	Q	PCB 196	Q	PCB 199	PCB 201	Q	PCB 202	Q
116489	CONTROL-1	ug/kg	<0.95		<0.95		<0.95		0.59	<0.95	<0.95	<0.95	<0.95		<0.95		<0.95	<0.95		<0.95	
116490	CONTROL-2	ug/kg	<1.00		<1.00		<1.00		0.61	<1.00	<1.00	<1.00	<1.00		<1.00		<1.00	<1.00		<1.00	
116491	CONTROL-3	ug/kg	<0.96		<0.96		<0.96		0.62	<0.96	<0.96	<0.96	<0.96		<0.96		<0.96	<0.96		<0.96	
116492	EBU1 1-1	ug/kg	<0.86		0.36	C	<0.86		NR	<0.86	<0.86	<0.86	<0.86		<0.86		<0.86	0.45	C	<0.86	
116493	EBU1 1-2	ug/kg	<0.99		0.73	C	0.58	C	NR	<0.99	<0.99	<0.99	<0.99		<0.99		<0.99	1.06	C	<0.99	
116494	EBU1 1-3	ug/kg	<0.62		0.36	C	0.31	C	NR	<0.62	<0.62	<0.62	<0.62		<0.62		<0.62	0.46	C	<0.62	
116495	EBU1 1-4	ug/kg	<0.59		0.64	C	0.39	C	NR	<0.59	<0.59	0.23	<0.59		<0.59		<0.59	0.618	C	<0.59	
116496	EBU1 1-5	ug/kg	<0.92		<0.92		0.39	C	NR	<0.92	<0.92	<0.92	<0.92		<0.92		<0.92	0.46	C	<0.92	
116497	EBU2 1-1	ug/kg	<0.99		<0.99		0.43	C	NR	<0.99	<0.99	<0.99	<0.99		<0.99		<0.99	0.44	C	<0.99	
116497	EBU2 1-1MS	ug/kg			19.3								17.5								
116497	EBU2 1-1MS Spike Amt				26.5								26.5								
116497	EBU2 1-1MS % REC				72.8								66								
116497	EBU2 1-1MSD				23.1								20.3								
116497	EBU2 1-1MSD Spike Amt				33								33								
116497	EBU2 1-1MSD % REC				70								61.5								
116497	EBU2 1-1MSD RPD				3.9								7.1								
116498	EBU2 2-1	ug/kg	<0.93		0.39	C	0.31	C	NR	<0.93	<0.93	<0.93	<0.93		<0.93		<0.93	0.59	C	<0.93	
116499	EBU2 3-1	ug/kg	<0.94		<0.94		<0.94		NR	<0.94	<0.94	<0.94	1.17	C	<0.94		<0.94	0.44	C	<0.94	
116500	EBU2 4-1	ug/kg	0.38	C	0.44	C	0.38	C	NR	<0.93	<0.93	<0.93	<0.93		<0.93		<0.93	0.76	C	<0.93	
116501	EBU2 5-1	ug/kg	<0.99		1.62	C	0.44	C	NR	<0.99	<0.99	1.14	0.62	C	0.82	C	<0.99	1.31	C	<0.99	
116502	EBU3 1-1	ug/kg	<0.85		1.05	C	0.89	C	NR	<0.85	<0.85	<0.85	0.28	C	<0.85		<0.85	<0.85		<0.85	
116503	EBU3 2-1	ug/kg	<0.73		0.51	C	<0.73		NR	<0.73	<0.73	<0.73	<0.73		<0.73		<0.73	1.53	C	0.29	C
116504	EBU3 3-1	ug/kg	<0.95		0.63	C	0.36	C	NR	<0.95	<0.95	0.36	<0.95		<0.95		<0.95	1.07		<0.95	
116505	EBU3 4-1	ug/kg	<0.73		0.43	C	0.33	C	NR	<0.73	<0.73	0.35	<0.73		<0.73		<0.73	0.91		<0.73	
116506	EBU3 5-1	ug/kg	<0.85		0.49	C	0.32	C	NR	<0.85	<0.85	<0.85	<0.85		<0.85		<0.85	0.95		<0.85	

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 182	Q	PCB 183	Q	PCB 185	Q	PCB 187	PCB 189	PCB 191	PCB 194	PCB 195	Q	PCB 196	Q	PCB 199	PCB 201	Q	PCB 202	Q
116507	EBU4 1-1	ug/kg	0.814	C	1.13	C	0.29	C	NR	<0.56	<0.56	0.19	<0.56		<0.56		0.25	0.55	C	<0.56	
116508	EBU4 2-1	ug/kg	<0.71		1.3	C	0.55	C	NR	<0.71	<0.71	<0.71	0.26	C	<0.71		<0.71	1.12	C	<0.71	
116509	EBU4 3-1	ug/kg	<0.99		0.55	C	0.36	C	NR	<0.99	<0.99	<0.99	<0.99		<0.99		<0.99	0.67	C	<0.99	
116510	EBU4 4-1	ug/kg	<0.99		0.97	C	0.48	C	NR	<0.99	<0.99	<0.99	<0.99		<0.99		<0.99	0.83	C	<0.99	
116511	EBU4 5-1	ug/kg	<1.00		0.75	C	0.55	C	NR	<1.00	<1.00	<1.00	<1.00		<1.00		<1.00	0.88	C	<1.00	
116512	EBU5 1-1	ug/kg	<1.00		0.59	C	<1.00		NR	<1.00	<1.00	<1.00	<1.00		<1.00		<1.00	0.95	C	<1.00	
116513	EBU5 2-1	ug/kg	<1.00		0.82	C	0.47	C	NR	<1.00	<1.00	<1.00	<1.00		<1.00		<1.00	0.87	C	<1.00	
116514	EBU5 3-1	ug/kg	<0.93		0.59	C	0.39	C	NR	<0.93	<0.93	<0.93	<0.93		<0.93		<0.93	0.71	C	<0.93	
116515	EBU5 4-1	ug/kg	<0.97		0.44	C	0.38	C	NR	<0.97	<0.97	<0.97	<0.97		<0.97		<0.97	0.83	C	<0.97	
116516	EBU5 5-1	ug/kg	<0.99		0.52	C	0.62	C	NR	<0.99	<0.99	<0.99	<0.99		<0.99		<0.99	1.03	C	<0.99	
BL#01	METHOD BLANK 01 (116489-116503)	ug/kg	<1.00		<1.00		<1.00		<1.00	<1.00	<0.00	<1.00	<1.00		<1.00		<1.00	<1.00		<1.00	
BL#02	LCS 01 (116489-116503)	ug/kg	N/A		18.8		N/A		18.7	N/A	N/A	N/A	17.4		N/A		N/A	N/A		N/A	
BL#02	LCS 01 (116489-116503) Spk Amt				20				20				20								
BL#02	LCS 01 (116489-116503) % REC				94				93.5				87								
BL#02	LCSD 01 (116489-116503) Dupl				18.4				18.4				17.2								
BL#02	LCSD 01 (116489-116503) Spk Amt				20				20				20								
BL#02	LCSD 01 (116489-116503) % REC				92				92				86								
BL#02	LCSD 01 (116489-116503) RPD				2.2				1.6				1.2								
BL#03	METHOD BLANK 02 (116504-116516)	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	
BL#04	LCS 02 (116504-116516)	ug/kg	N/A		20.9		N/A			N/A	N/A	N/A	17.5		N/A		N/A	N/A		N/A	
BL#04	LCS 02 (116504-116516) Spk Amt				20				20				20								
BL#04	LCS 02 (116504-116516) % REC				104.5				0				87.5								

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

C = Data confirmed based upon retention time but reported from one column only due to coelution.

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

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

Lab ID	Field Description	Units	PCB 203	Q	PCB 205	PCB 206	PCB 207	PCB 208	Q	PCB 155	TMX
116489	CONTROL-1	ug/kg	<0.95		<0.95	<0.95	<0.95	<0.95		<0.95	51.9%
116490	CONTROL-2	ug/kg	<1.00		<1.00	<1.00	<1.00	<1.00		<1.00	72.9%
116491	CONTROL-3	ug/kg	<0.96		<0.96	<0.96	<0.96	<0.96		<0.96	76.9%
116492	EBU1 1-1	ug/kg	0.27	C	<0.86	0.47	<0.86	0.33	C	<0.86	58.8%
116493	EBU1 1-2	ug/kg	0.77	C	<0.99	0.91	<0.99	0.76	C	<0.99	81.6%
116494	EBU1 1-3	ug/kg	0.27	C	<0.62	0.51	<0.62	0.33	C	<0.62	80.2%
116495	EBU1 1-4	ug/kg	0.34	C	<0.59	0.612	<0.59	0.49	C	<0.59	75.2%
116496	EBU1 1-5	ug/kg	<0.92		<0.92	0.49	<0.92	0.4	C	<0.92	58.4%
116497	EBU2 1-1	ug/kg	<0.99		<0.99	0.54	<0.99	0.44	C	<0.99	66.1%
116497	EBU2 1-1MS	ug/kg				16.8					
116497	EBU2 1-1MS Spike Amt					26.5					
116497	EBU2 1-1MS % REC					61.5					68.7%
116497	EBU2 1-1MSD					18.5					
116497	EBU2 1-1MSD Spike Amt					33					
116497	EBU2 1-1MSD % REC					54.5					65.7%
116497	EBU2 1-1MSD RPD					12.1					
116498	EBU2 2-1	ug/kg	0.31	C	<0.93	0.65	<0.93	0.59	C	<0.93	71.0%
116499	EBU2 3-1	ug/kg	0.33	C	<0.94	<0.94	<0.94	0.63	C	<0.94	62.1%
116500	EBU2 4-1	ug/kg	0.42	C	<0.93	1.05	<0.93	0.72	C	<0.93	73.3%
116501	EBU2 5-1	ug/kg	0.9	C	<0.99	0.9	<0.99	0.58	C	<0.99	70.8%
116502	EBU3 1-1	ug/kg	0.5	C	<0.85	1.18	<0.85	0.97	C	<0.85	78.8%
116503	EBU3 2-1	ug/kg	0.57	C	<0.73	1.05	<0.73	0.87	C	<0.73	71.8%
116504	EBU3 3-1	ug/kg	0.55	C	0.95	1.46	<0.95	1.1	C	<0.95	73.1%
116505	EBU3 4-1	ug/kg	0.48	C	<0.73	1.21	<0.73	0.92	C	<0.73	68.5%
116506	EBU3 5-1	ug/kg	0.51	C	<0.85	1.26	<0.85	1	C	<0.85	55.2%

Notes:

= BRL
= J Value

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

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

Lab ID	Field Description	Units	PCB 203	Q	PCB 205	PCB 206	PCB 207	PCB 208	Q	PCB 155	TMX
116507	EBU4 1-1	ug/kg	0.32	C	<0.56	0.52	<0.56	0.47	C	<0.56	70.1%
116508	EBU4 2-1	ug/kg	0.53	C	<0.71	1.19	<0.71	0.68	C	<0.71	65.7%
116509	EBU4 3-1	ug/kg	0.37	C	<0.99	0.66	<0.99	0.55	C	<0.99	52.8%
116510	EBU4 4-1	ug/kg	0.36	C	<0.99	0.78	<0.99	0.65	C	<0.99	55.9%
116511	EBU4 5-1	ug/kg	0.45	C	<1.00	0.85	<1.00	0.64	C	<1.00	69.9%
116512	EBU5 1-1	ug/kg	0.42	C	<1.00	1.45	<1.00	1.06	C	<1.00	69.8%
116513	EBU5 2-1	ug/kg	0.38	C	<1.00	1.16	<1.00	0.98	C	<1.00	77.8%
116514	EBU5 3-1	ug/kg	0.45	C	<0.93	0.93	0.35	0.71	C	<0.93	66.3%
116515	EBU5 4-1	ug/kg	0.4	C	<0.97	1.24	<0.97	0.97	C	<0.97	74.7%
116516	EBU5 5-1	ug/kg	0.45	C	<0.99	1.33	<0.99	1.1	C	<0.99	78.7%
BL#01	METHOD BLANK 01 (116489-116503)	ug/kg	<1.00		<1.00	<1.00	<1.00	<1.00		<1.00	107%
BL#02	LCS 01 (116489-116503)	ug/kg	N/A		N/A	16.4	N/A	N/A		N/A	106%
BL#02	LCS 01 (116489-116503) Spk Amt					20					
BL#02	LCS 01 (116489-116503) % REC					82					
BL#02	LCSD 01 (116489-116503) Dupl					16.2					98.2%
BL#02	LCSD 01 (116489-116503) Spk Amt					20					
BL#02	LCSD 01 (116489-116503) % REC					81					
BL#02	LCSD 01 (116489-116503) RPD					1.2					
BL#03	METHOD BLANK 02 (116504-116516)	ug/kg	<1.00		<1.00	<1.00	<1.00	<1.00		<1.00	111%
BL#04	LCS 02 (116504-116516)	ug/kg	N/A		N/A	17.7	N/A	N/A		N/A	111%
BL#04	LCS 02 (116504-116516) Spk Amt					20					20
BL#04	LCS 02 (116504-116516) % REC					88.5					5.55

Notes:

= BRL
= J Value

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

Job Description: **18 Mile Creek-Bio Buffalo - Lotufo/Karn** Job File Number: **116489**

ECB Quality Assurance Corrective Action Form

Analysis: **PCB congeners** Date: **12-January-04**

Analyst: **Harrison** Instrument: **92**

Problem: **(1) Interference with congener 151 on 2nd column, values >40% between columns**
(2) No spike recovery for congener 187

Sample Number(s) Affected: **(1) All except 116493-94, 116489-116501**
(2) 116504 BS

Recommended Corrective Action:

Corrective Action Taken By Analyst: **(1) 1st column reported as estimated value**
(2) Peaks cannot be resolved due to interferences

Comments:

Date Corrective Action Taken: **12-January-04**

Reviewed by:

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

LAB ID	Field Description	Units	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL	ZN	AL	BA
116517	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
116518	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
116519	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
116520	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
116521	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
116522	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
116523	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
116524	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
116525	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
116526	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
116527	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
116527	EBU2 3-1 MS	mg/kg	0.984	1.62	2.3	2.74	15.78	26.1	3.43	18.3	2.71	1.49	1.73	146	N/A	18.1
116527	EBU2 3-1 MS spk amt		12	6	3	3	12	12	6	12	3	3	3	50	N/A	30
116527	EBU2 3-1 MS % REC	mg/kg	7.44	5.23	75	80.96	64.3	57.97		94.9	74	49	56.5	99.2		
116527	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
116527	EBU2 3-1 MD RPD		114	25.7	9.37	11.7	59.38	3.61	215	56.18	14.7	0	28.4	32.3	9.29	128
116527	EBU2 3-1 PD AS	mg/kg	31.6	32.5	32.79	29.9	39.8	48.6	50.1	37.59	31.4	30.5	31.95	192		92.2
116527	EBU2 3-1 PD AS spk amt		32	32	32	32	32	32	32	32	32	32	32	100		32
116527	EBU2 3-1 PD AS % REC	mg/kg	98.3	97.3	102.2	92.4	97.8	92	91.6	95.8	96.5	95.1	99.7	95.8		90.4
116527	EBU2 3-1 PD AD	mg/kg	0.0813	1.29	0.0499	0.308	8.26	18.9	20.4	6.72	0.469	<0.25	0.0316	95.7	460	61.4
116527	EBU2 3-1 PD AD RPD		11.2	0.985	7.3	1.65	2.35	1.35	1.86	2.82	3.49	0	7.03	0.73	0.434	2.98
116528	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
116529	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
116530	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
116531	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
116532	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
116533	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
116534	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

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
PD AS - Post Digest Analytical Spike
PD AD - Post Digest Analytical Duplicate
NR = Not reported

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

LAB ID	Field Description	Units	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL	ZN	AL	BA
116535	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
116536	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
116537	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
116538	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
116538	EBU4 4-1 MS	mg/kg	13.99	40.9	10.3	10.2	51.9	65.5	53.3	49.6	9.94	10	9.92	450	N/A	205
116538	EBU4 4-1 MS spk amt		39.4	19.68	9.84	9.84	39.35	39.35	19.68	39.35	9.84	9.84	9.84	49.2	N/A	98.4
116538	EBU4 4-1 MS % REC	mg/kg	35.5	203	104.8	103	118	150	236	120.5	96.3	101.7	100.7	717		118
116538	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
116538	EBU4 4-1 MD RPD	mg/kg	137	1.56	53.6	69.9	36.4	17.6	39.2	65.8	36.5	0	7.69	114	95.9	49.6
116538	EBU4 4-1 PD AS	mg/kg	42.98	42.7	43.4	40.4	47.3	47.6	48.5	43.2	41.1	41.3	42.5	187		130
116538	EBU4 4-1 PD AS spk amt		42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	50	N/A	42.8
116538	EBU4 4-1 PD AS % REC	mg/kg	100.4	97.7	101	94.3	97.8	94	97.2	95.7	94.9	96.4	99.2	181	N/A	98
116538	EBU4 4-1 PD AD	mg/kg	<0.025	0.854	0.0294	0.0552	5.51	6.56	6.63	2.19	0.474	<0.025	<0.025	220	1120	84.2
116538	EBU4 4-1 PD AD RPD		0	7.06	16.2	10.3	2.52	1.05	3.05	1.18	1.82	0	0	78	74.8	4.57
116539	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
116540	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
116541	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
116542	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
116543	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
116544	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
BL#01	METHOD BLANK 01(517-531)	mg/kg	<0.025	<0.025	<0.025	<0.025	1.04	0.281	<0.025	0.478	<0.025	<0.025	<0.025	2.16	<2.00	0.152
BL#02	LCS 01	mg/kg	20.6	10	4.92	4.85	20.5	21.6	12.1	20.9	4.61	4.77	5.26	46.1	N/A	51.1
	LCS 01 spk amt	mg/kg	20	10	5	5	20	20	10	20	5	5	5	50		50
	LCS 01 % REC		103	100	98.4	97	102.5	108	121	104.5	92.2	95.4	105.2	92.2		102.2
BL#03	EXTERNAL QC 01	mg/kg	2.81	10.9	<0.025	0.138	2.99	13.2	49.2	1.86	0.0914	0.0629	0.209	30.7	101	41.9
BL#04	METHOD BLANK 02 (532-544)	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.122	<0.025	0.0453	<0.025	<0.025	<0.025	1.26	<2.00	0.0735
BL#05	LCS 02	mg/kg	21.3	9.99	4.9	4.89	21	21.7	10.9	20.2	4.46	4.96	5.31	45.3	N/A	50.8
	LCS 02 spk amt	mg/kg	20	10	5	5	20	20	10	20	5	5	5	50		50
	LCS 02 %REC		106.5	99.9	98	97.8	105	108.5	109	101	89.2	99.2	106.2	90.6		101.6
BL#06	EXTERNAL QC 02	mg/kg	2.9	10.8	<0.025	0.134	1.57	12.7	46.6	1.42	0.0423	0.0862	0.0991	28.9	86.5	42.5

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
PD AS - Post Digest Analytical Spike
PD AD - Post Digest Analytical Duplicate
NR = Not reported

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

LAB ID	Field Description	Units	CA	CO	FE	MG	MN	K	NA	V
116517	CONTROL-1	mg/kg	1260	0.665	1330	692	33.8	1200	772	1.45
116518	CONTROL-2	mg/kg	365	0.449	764	314	15.5	1330	758	0.568
116519	CONTROL-3	mg/kg	738	0.562	485	537	32.5	1340	691	1.09
116520	EBU1 1-1	mg/kg	1360	1.04	1270	330	35.3	791	495	1.61
116521	EBU1 1-2	mg/kg	1300	0.77	1190	331	27.4	1290	866	0.992
116522	EBU1 1-3	mg/kg	4100	1.61	397	464	97.6	628	424	2.11
116523	EBU1 1-4	mg/kg	723	0.39	676	200	13.2	1110	728	0.518
116524	EBU1 1-5	mg/kg	1420	0.931	1580	362	34.1	986	629	1.73
116525	EBU2 1-1	mg/kg	1070	1.47	1770	362	24.4	917	582	1.82
116526	EBU2 2-1	mg/kg	584	0.709	1100	258	14.9	1070	702	1.06
116527	EBU2 3-1	mg/kg	1110	1.08	1840	377	26.5	986	616	1.91
116527	EBU2 3-1 MS	mg/kg	N/A	11.5	N/A	N/A	41.4	N/A	N/A	7.68
116527	EBU2 3-1 MS spk amt		N/A	12	N/A	N/A	12	N/A	N/A	12
116527	EBU2 3-1 MS % REC	mg/kg		87			124			48.1
116527	EBU2 3-1 MD	mg/kg	1330	1.41	1610	473	32.9	786	494	2.38
116527	EBU2 3-1 MD RPD		21.4	37.2	20.6	28.4	27.5	21	19.9	32.6
116527	EBU2 3-1 PD AS	mg/kg	2650	32.3	3090	1700	56.5	2290	1940	33.4
116527	EBU2 3-1 PD AS spk amt		1310	32	1310	1310	32	1310	1310	32
116527	EBU2 3-1 PD AS % REC	mg/kg	117.6	97.4	94.6	100.5	93.8	99	100.9	98.4
116527	EBU2 3-1 PD AD	mg/kg	1110	1.05	1800	375	25.7	986	621	1.88
116527	EBU2 3-1 PD AD RPD		0	2.41	2.46	0.511	2.94	0	0.725	1.69
116528	EBU2 4-1	mg/kg	323	0.434	720	245	10.4	1330	976	0.552
116529	EBU2 5-1	mg/kg	2310	2.31	3210	537	45.8	719	431	3.25
116530	EBU3 1-1	mg/kg	861	1.42	1690	343	33	1120	591	1.99
116531	EBU3 2-1	mg/kg	1340	1.75	1920	404	44.1	948	573	2.43
116532	EBU3 3-1	mg/kg	1220	1.59	1750	368	40.1	863	521	2.21
116533	EBU3 4-1	mg/kg	1200	2.4	2280	452	45.8	1050	615	2.85
116534	EBU3 5-1	mg/kg	1200	1.62	1930	447	37.2	1170	643	2.12

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
PD AS - Post Digest Analytical Spike
PD AD - Post Digest Analytical Duplicate
NR = Not reported

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

LAB ID	Field Description	Units	CA	CO	FE	MG	MN	K	NA	V
116535	EBU4 1-1	mg/kg	2510	2.48	2510	379	45.8	849	500	2.48
116536	EBU4 2-1	mg/kg	1690	0.886	1770	342	31.1	1030	679	1.74
116537	EBU4 3-1	mg/kg	3600	1.86	4220	629	89.8	767	435	4.66
116538	EBU4 4-1	mg/kg	554	0.54	1070	283	17.6	1350	899	0.787
116538	EBU4 4-1 MS	mg/kg	N/A	72.7	N/A	N/A	125	N/A	N/A	45.1
116538	EBU4 4-1 MS spk amt		M	39.4	N/A	N/A	39.35	N/A	N/A	39.35
116538	EBU4 4-1 MS % REC	mg/kg		107			272			113
116538	EBU4 4-1 MD		1110	0.734	1940	319	40.5	859	532	2.13
116538	EBU4 4-1 MD RPD	mg/kg	67.1	30.5	57.7	12	78.5	44.6	51.4	92
116538	EBU4 4-1 PD AS	mg/kg	2740	42.8	2830	2110	59.7	3240	2740	42.7
116538	EBU4 4-1 PD AS spk amt		1760	42.8	1760	1760	42.8	1760	1760	42.8
116538	EBU4 4-1 PD AS % REC	mg/kg	124	97.7	100	104	98.2	107.6	105	98
116538	EBU4 4-1 PD AD	mg/kg	577	0.552	1100	287	17.8	1410	908	0.789
116538	EBU4 4-1 PD AD RPD		4.09	2.19	3.15	1.5	0.966	4.33	0.948	0.326
116539	EBU4 5-1	mg/kg	601	0.695	1230	304	28.6	1290	835	0.994
116540	EBU5 1-1	mg/kg	328	0.3	651	212	15.6	1190	656	0.714
116541	EBU5 2-1	mg/kg	874	0.576	1520	250	31.7	674	417	1.67
116542	EBU5 3-1	mg/kg	2280	1	2190	536	61.3	618	293	2.82
116543	EBU5 4-1	mg/kg	2770	0.574	1210	341	34.8	1100	596	1.36
116544	EBU5 5-1	mg/kg	536	0.626	1240	371	30.1	1370	771	1.1
BL#01	METHOD BLANK 01(517-531)	mg/kg	<20.0	0.148	12.3	<10.0	0.241	<20.0	<20.0	<0.025
BL#02	LCS 01	mg/kg	N/A	20.9	N/A	N/A	22.1	N/A	N/A	20.5
	LCS 01 spk amt	mg/kg		20			20			20
	LCS 01 % REC			104.5			110.5			102.5
BL#03	EXTERNAL QC 01	mg/kg	20000	0.148	381	6000	89.1	14400	69.2	0.399
BL#04	METHOD BLANK 02 (532-544)	mg/kg	<20.0	<0.025	29.4	<10.0	0.108	<20.0	<20.0	<0.025
BL#05	LCS 02	mg/kg	N/A	21	N/A	N/A	21.3	N/A	N/A	21.1
	LCS 02 spk amt	mg/kg		20			20			20
	LCS 02 %REC			105			106.5			105.5
BL#06	EXTERNAL QC 02	mg/kg	20600	0.134	238	6120	87.5	14900	61.8	0.51

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
PD AS - Post Digest Analytical Spike
PD AD - Post Digest Analytical Duplicate
NR = Not reported

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

Lab ID	Field Description	Units	HG
116545	CONTROL-1	mg/kg	0.0313
116546	CONTROL-2	mg/kg	0.0378
116547	CONTROL-3	mg/kg	0.187
116548	EBU1 1-1	mg/kg	0.0853
116548	EBU1 1-1 MS	mg/kg	0.17112
116548	EBU1 1-1 MS spk amt	mg/kg	0.0743
116548	EBU1 1-1 MS % REC		115.5
116548	EBU1 1-1 MD	mg/kg	0.0848
116548	EBU1 1-1 MD RPD		0.6
116549	EBU1 1-2	mg/kg	11.5
116550	EBU1 1-3	mg/kg	0.112
116551	EBU1 1-4	mg/kg	0.0833
116552	EBU1 1-5	mg/kg	0.0718
116553	EBU2 1-1	mg/kg	0.116
116554	EBU2 2-1	mg/kg	0.0929
116555	EBU2 3-1	mg/kg	0.195
116556	EBU2 4-1	mg/kg	0.0436
116557	EBU2 5-1	mg/kg	0.113
116558	EBU3 1-1	mg/kg	0.148
116559	EBU3 2-1	mg/kg	0.116
116560	EBU3 3-1	mg/kg	0.227
116561	EBU3 4-1	mg/kg	0.198
116562	EBU3 5-1	mg/kg	0.169
116563	EBU4 1-1	mg/kg	0.105
116564	EBU4 2-1	mg/kg	0.0607
116565	EBU4 3-1	mg/kg	0.128
116566	EBU4 4-1	mg/kg	0.0241
116567	EBU4 5-1	mg/kg	0.0409
116568	EBU5 1-1	mg/kg	0.0304
116569	EBU5 2-1	mg/kg	0.0434
116570	EBU5 3-1	mg/kg	0.0269
116571	EBU5 4-1	mg/kg	0.029
116572	EBU5 5-1	mg/kg	0.0148
BL#01	METHOD BLANK 01	mg/kg	<0.0040
BL#02	LCS 01	mg/kg	0.0414
	LCS 01 spk amt	mg/kg	0.04
	LCS 01 % REC		103.5
BL#03	EXTERNAL QC 01	mg/kg	0.0508
	EXTERNAL QC 01 spk amt	mg/kg	0.471
	EXTERNAL QC 01 % REC		107.9
BL#04	METHOD BLANK 02	mg/kg	<0.0040
BL#05	LCS 02	mg/kg	0.0423
	LCS 01 spk amt	mg/kg	0.04
	LCS 01 % REC		105.8
BL#06	EXTERNAL QC 02	mg/kg	0.543
	EXTERNAL QC 02 spk amt	mg/kg	0.471
	EXTERNAL QC 02 % REC		115.3

Notes:

= BRL

BRL = Below Reporting Limit

APPENDIX F

EIGHTEENMILE CREEK AOC

BIOACCUMULATION SUMMARY

TOXICOLOGY RESULTS

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

Table 1

Treatment Sample ID	Average grams wet weight	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

APPENDIX G

EIGHTEENMILE CREEK AOC

BIOACCUMULATION REPORTS

TOXICOLOGY RESULTS

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

Table 1

Treatment	Replicate	Wet wt. (g)	Average	Standard deviation
Control	1	3.55		
	2	3.42		
	3	3.05	3.34	0.26
EBU-1	1	8.67		
	2	3.30		
	3	4.43		
	4	6.75		
	5	5.82	5.79	2.08
EBU-2	1	5.83		
	2	5.13		
	3	7.43		
	4	6.20		
	5	4.71	5.86	1.06
EBU-3	1	4.83		
	2	6.65		
	3	3.69		
	4	9.07		
	5	3.79	5.61	2.27
EBU-4	1	6.07		
	2	8.25		
	3	3.60		
	4	3.27		
	5	3.10	4.86	2.25
EBU-5	1	3.08		
	2	3.14		
	3	3.20		
	4	3.19		
	5	3.18	3.16	0.05

Eighteenmile Creek AOC - Lipids in *L. variegatus*

Table 2

	Replicate	Sample Mass (mg)	% Lipids	Average	Standard deviation
Initial	1	97	1.02	0.71	0.29
	2	86	0.45		
	3	111	0.65		
Control	1	79	0.56	0.78	0.19
	2	85	0.83		
	3	81	0.93		
EBU-1	1	73	1.50	1.27	0.62
	2	100	0.82		
	3	61	2.23		
	4	101	0.74		
	5	78	1.04		
EBU-2	1	83	1.93	1.69	0.65
	2	98	1.68		
	3	90	1.22		
	4	125	0.98		
	5	84	2.65		
EBU-3	1	86	2.45	1.15	0.87
	2	94	1.65		
	3	125	0.43		
	4	94	0.64		
	5	85	0.58		
EBU-4	1	91	0.88	0.96	0.22
	2	93	1.01		
	3	90	1.30		
	4	92	0.71		
	5	92	0.87		
EBU-5	1	84	1.13	0.96	0.32
	2	52	1.44		
	3	111	0.67		
	4	82	0.75		
	5	61	0.80		

Eighteenmile Creek AOC - Dry/Wet Ratio for *L. variegatus*

Table 3

Replicate	Dry-to-wet weight ratio	Average	Standard deviation
1	0.192	0.164	0.034
2	0.183		
3	0.120		
4	0.190		
5	0.133		

Eighteenmile Creek AOC - Pesticides in *L. variegatus*

TABLE 4

SEDIMENT	REP	ALDRIN	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	PPDDT	Heptachlor	Dieldrin	A-Endosulfan	B-Endosulfan	Endosulfan sulfate
CONTROL	1	0.72	0.72	0.72	0.72	0.72	1.45	1.45	1.45	0.72	1.45	0.72	2.23	1.45
CONTROL	2	1.49	0.70	0.70	0.70	0.70	1.39	1.39	1.39	0.70	1.39	0.70	1.39	7.35
CONTROL	3	0.83	4.41	0.83	0.83	0.83	1.66	1.66	1.66	0.83	1.66	0.83	1.66	14.70
AVG		1.01	1.94	0.75	0.75	0.75	1.50	1.50	1.50	0.75	1.50	0.75	1.76	7.83
STD		0.42	2.14	0.07	0.07	0.07	0.14	0.14	0.14	0.07	0.14	0.07	0.43	6.64
CV		0.41	1.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.24	0.85
EBU-1	1	0.64	0.64	0.64	0.64	0.64	1.28	6.87	3.21	1.29	1.28	0.64	1.28	1.28
EBU-1	2	0.77	0.77	0.77	0.77	0.77	5.23	56.60	1.74	0.77	1.74	0.77	1.74	1.74
EBU-1	3	0.60	0.60	0.60	0.60	0.60	1.21	8.90	1.21	0.60	1.21	0.60	1.21	1.21
EBU-1	4	0.49	0.49	0.49	0.49	0.49	0.98	14.50	0.98	0.49	0.98	0.49	0.98	0.98
EBU-1	5	0.68	0.68	0.68	0.68	0.68	1.36	9.76	1.36	0.68	1.36	0.68	1.36	1.36
AVG		0.64	0.64	0.64	0.64	0.64	2.01	19.33	1.70	0.77	1.31	0.64	1.31	1.31
STD		0.10	0.10	0.10	0.10	0.10	1.80	21.02	0.89	0.31	0.28	0.10	0.28	0.28
CV		0.16	0.16	0.16	0.16	0.16	0.90	1.09	0.52	0.40	0.21	0.16	0.21	0.21
EBU-2	1	0.80	0.80	0.80	0.80	0.80	1.60	16.60	2.61	0.80	1.60	0.80	1.60	1.60
EBU-2	2	0.79	0.79	0.79	0.79	0.79	1.58	8.45	3.02	0.79	1.58	0.79	1.58	1.58
EBU-2	3	0.54	0.54	0.54	0.54	0.54	1.09	9.35	1.09	0.84	1.09	0.54	1.09	1.09
EBU-2	4	0.78	0.78	0.78	0.78	0.78	1.56	10.80	1.56	0.99	1.56	0.78	1.56	1.56
EBU-2	5	0.75	0.75	0.75	0.75	0.75	1.49	7.03	2.61	0.75	1.49	0.75	1.49	1.49
AVG		0.73	0.73	0.73	0.73	0.73	1.46	10.45	2.18	0.83	1.46	0.73	1.46	1.46
STD		0.11	0.11	0.11	0.11	0.11	0.21	3.70	0.82	0.09	0.21	0.11	0.21	0.21
CV		0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.37	0.11	0.15	0.15	0.15	0.15

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/kg

Eighteenmile Creek AOC - Pesticides in *L. variegatus*

TABLE 4

SEDIMENT	REP	ALDRIN	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	PPDDT	Heptachlor	Dieldrin	A-Endosulfan	B-Endosulfan	Endosulfan sulfate
EBU-3	1	0.82	0.82	1.55	0.82	0.82	1.64	12.30	1.64	0.82	1.64	0.82	1.64	1.64
EBU-3	2	0.82	1.42	0.82	0.82	0.82	1.64	13.20	1.64	0.82	1.64	0.82	1.64	1.64
EBU-3	3	0.72	5.34	0.72	0.72	0.72	1.43	13.80	1.43	0.72	1.43	0.72	1.43	1.43
EBU-3	4	0.74	2.09	0.74	0.74	0.74	1.47	15.20	1.47	0.74	1.47	0.74	1.47	10.50
EBU-3	5	0.62	2.17	0.62	0.62	0.62	1.24	12.30	1.24	0.62	1.24	0.62	1.24	12.70
AVG		0.74	2.37	0.89	0.74	0.74	1.49	13.36	1.49	0.74	1.49	0.74	1.49	5.58
STD		0.08	1.75	0.38	0.08	0.08	0.17	1.21	0.17	0.08	0.17	0.08	0.17	5.55
CV		0.11	0.74	0.42	0.11	0.11	0.11	0.09	0.11	0.11	0.11	0.11	0.11	0.99
EBU-4	1	0.62	0.62	0.62	0.62	0.62	1.24	10.20	1.24	1.54	1.24	0.62	1.24	1.24
EBU-4	2	0.59	0.59	0.59	0.59	0.59	1.17	9.34	1.17	0.94	1.17	0.59	1.17	10.30
EBU-4	3	0.61	0.61	0.61	0.61	0.61	1.21	10.60	1.21	0.61	1.21	0.61	1.21	1.21
EBU-4	4	0.71	0.71	0.71	0.71	0.71	1.42	15.10	1.42	1.36	1.42	0.71	1.42	3.27
EBU-4	5	0.79	0.79	0.79	0.79	0.79	1.57	16.60	1.57	1.12	1.57	0.79	1.57	1.57
AVG		0.66	0.66	0.66	0.66	0.66	1.32	12.37	1.32	1.11	1.32	0.66	1.32	3.52
STD		0.08	0.08	0.08	0.08	0.08	0.17	3.25	0.17	0.36	0.17	0.08	0.17	3.88
CV		0.13	0.13	0.13	0.13	0.13	0.13	0.26	0.13	0.33	0.13	0.13	0.13	1.10
EBU-5	1	0.83	0.83	0.83	0.83	0.83	1.67	5.44	3.53	0.83	1.67	0.83	1.67	1.67
EBU-5	2	0.79	0.79	0.79	0.79	0.79	1.58	7.82	3.83	0.79	1.58	0.79	1.58	1.58
EBU-5	3	0.74	0.74	0.74	0.74	0.74	1.49	9.54	1.49	1.22	1.49	0.74	1.49	1.49
EBU-5	4	0.81	0.81	0.81	0.81	0.81	1.61	4.42	1.61	0.81	1.61	0.81	1.61	1.61
EBU-5	5	0.78	0.78	0.78	0.78	0.78	1.56	29.10	1.56	0.78	1.56	0.78	1.56	1.56
AVG		0.79	0.79	0.79	0.79	0.79	1.58	11.26	2.40	0.89	1.58	0.79	1.58	1.58
STD		0.03	0.03	0.03	0.03	0.03	0.07	10.17	1.17	0.19	0.07	0.03	0.07	0.07
CV		0.04	0.04	0.04	0.04	0.04	0.04	0.90	0.49	0.21	0.04	0.04	0.04	0.04

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/kg

Eighteenmile Creek AOC - Pesticides in *L. variegatus*

TABLE 4

SEDIMENT	REP	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene	Alpha Chlordane	Gamma Chlordane
CONTROL	1	1.45	8.78	0.72	7.23	7.23	14.47	0.72	0.72
CONTROL	2	1.39	1.39	0.70	6.97	6.97	13.93	0.70	0.70
CONTROL	3	1.66	1.66	0.83	8.30	8.30	16.60	0.83	0.83
AVG		1.50	3.94	0.75	7.50	7.50	15.00	0.75	0.75
STD		0.14	4.19	0.07	0.71	0.71	1.41	0.07	0.07
CV		0.09	1.06	0.09	0.09	0.09	0.09	0.09	0.09
EBU-1	1	1.28	1.28	0.64	6.40	6.40	12.80	0.64	0.64
EBU-1	2	1.74	1.74	0.77	7.67	7.67	15.33	0.77	7.00
EBU-1	3	1.21	1.21	0.60	6.03	6.03	12.10	0.60	0.60
EBU-1	4	0.98	0.98	0.49	4.90	4.90	9.80	0.49	0.49
EBU-1	5	1.36	1.36	0.68	6.80	6.80	13.60	0.68	0.68
AVG		1.31	1.31	0.64	6.36	6.36	12.73	0.64	1.88
STD		0.28	0.28	0.10	1.02	1.02	2.03	0.10	2.86
CV		0.21	0.21	0.16	0.16	0.16	0.16	0.16	1.52
EBU-2	1	1.60	1.60	0.80	8.00	8.00	16.00	0.80	0.80
EBU-2	2	1.58	1.58	0.79	7.87	7.87	15.77	0.79	5.37
EBU-2	3	1.09	1.09	0.54	5.43	5.43	10.87	0.54	0.54
EBU-2	4	1.56	1.56	0.78	7.80	7.80	15.57	0.78	0.78
EBU-2	5	1.49	1.49	0.75	7.47	7.47	14.93	0.75	0.75
AVG		1.46	1.46	0.73	7.31	7.31	14.63	0.73	1.65
STD		0.21	0.21	0.11	1.07	1.07	2.14	0.11	2.08
CV		0.15	0.15	0.15	0.15	0.15	0.15	0.15	1.26

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/kg

Eighteenmile Creek AOC - Pesticides in *L. variegatus*

TABLE 4

SEDIMENT	REP	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene	Alpha Chlordane	Gamma Chlordane
EBU-3	1	1.64	1.64	0.82	8.20	8.20	16.37	0.82	8.55
EBU-3	2	1.64	1.64	0.82	8.20	8.20	16.43	0.82	8.96
EBU-3	3	1.43	1.43	0.72	7.17	7.17	14.33	0.72	0.72
EBU-3	4	1.47	1.47	0.74	7.37	7.37	14.73	0.74	0.74
EBU-3	5	1.95	1.24	0.62	6.23	6.23	12.43	0.62	0.62
AVG		1.63	1.49	0.74	7.43	7.43	14.86	0.74	3.92
STD		0.20	0.17	0.08	0.82	0.82	1.65	0.08	4.42
CV		0.13	0.11	0.11	0.11	0.11	0.11	0.11	1.13
EBU-4	1	1.24	1.24	0.62	6.20	6.20	12.40	0.62	6.35
EBU-4	2	1.17	1.17	0.59	5.87	5.87	11.73	0.59	5.61
EBU-4	3	1.21	1.21	0.61	6.07	6.07	12.10	0.61	7.83
EBU-4	4	1.42	1.42	0.71	7.10	7.10	14.20	0.71	10.40
EBU-4	5	1.57	1.57	0.79	7.87	7.87	15.70	0.79	9.96
AVG		1.32	1.32	0.66	6.62	6.62	13.23	0.66	8.03
STD		0.17	0.17	0.08	0.84	0.84	1.68	0.08	2.12
CV		0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.26
EBU-5	1	1.67	1.67	0.83	8.33	8.33	16.67	0.83	0.83
EBU-5	2	1.58	1.58	0.79	7.90	7.90	15.77	0.79	0.79
EBU-5	3	1.49	1.49	0.74	7.43	7.43	14.87	0.74	0.74
EBU-5	4	1.61	1.61	0.81	8.07	8.07	16.10	0.81	0.81
EBU-5	5	1.56	1.56	0.78	7.80	7.80	15.60	0.78	0.78
AVG		1.58	1.58	0.79	7.91	7.91	15.80	0.79	0.79
STD		0.07	0.07	0.03	0.33	0.33	0.66	0.03	0.03
CV		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/kg

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 15	PCB 18	PCB 31	PCB 40	PCB 44	PCB 49	PCB 52	PCB 54	PCB 60	PCB 77	PCB 86	PCB 87	PCB 97	PCB 101	PCB 103
CONTROL	1	0.32	0.32	0.32	0.32	0.32	0.32	1.62	0.63	0.63	0.32	N/A	0.32	0.32	0.32	0.32
CONTROL	2	0.33	0.33	0.33	0.33	0.33	0.58	1.04	0.67	0.67	0.33	N/A	0.33	0.33	0.33	0.33
CONTROL	3	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.64	0.64	0.32	N/A	0.32	0.32	0.32	0.32
AVG		0.32	0.32	0.32	0.32	0.32	0.41	0.99	0.65	0.65	0.32		0.32	0.32	0.32	0.32
STD		0.01	0.01	0.01	0.01	0.01	0.15	0.65	0.02	0.02	0.01		0.01	0.01	0.01	0.01
CV		0.03	0.03	0.03	0.03	0.03	0.37	0.66	0.03	0.03	0.03		0.03	0.03	0.03	0.03
EBU-1	1	NR	4.82	8.67	2.16	9.72	13.60	17.30	0.57	1.15	0.74	N/A	5.16	3.84	11.60	0.29
EBU-1	2	NR	6.11	15.10	3.19	16.50	24.20	23.60	0.66	2.28	1.39	N/A	10.80	7.57	19.10	0.33
EBU-1	3	NR	5.40	10.30	2.07	10.10	13.70	17.00	0.41	1.33	0.73	N/A	5.55	4.11	10.70	0.21
EBU-1	4	NR	5.50	10.90	2.45	11.70	16.80	20.50	0.39	1.62	0.79	N/A	7.15	5.34	14.80	0.20
EBU-1	5	NR	5.06	8.60	1.95	10.20	13.60	17.40	0.61	1.45	0.86	N/A	5.41	4.06	9.89	0.31
AVG			5.38	10.71	2.36	11.64	16.38	19.16	0.53	1.57	0.90		6.81	4.98	13.22	0.27
STD			0.49	2.65	0.50	2.82	4.58	2.86	0.12	0.43	0.28		2.36	1.56	3.78	0.06
CV			0.09	0.25	0.21	0.24	0.28	0.15	0.23	0.28	0.31		0.35	0.31	0.29	0.23
EBU-2	1	NR	6.74	10.30	2.06	9.75	13.80	16.70	0.66	1.16	0.91	N/A	4.27	3.68	7.77	0.33
EBU-2	2	NR	7.41	12.30	2.44	12.10	18.40	21.10	0.62	1.10	0.85	N/A	5.38	4.56	11.20	0.31
EBU-2	3	NR	7.38	10.20	4.48	13.30	16.00	18.40	0.63	1.04	2.95	N/A	3.95	3.94	11.30	0.31
EBU-2	4	NR	8.63	10.90	2.96	14.00	20.70	24.20	0.62	1.28	0.80	N/A	5.99	5.23	15.50	0.31
EBU-2	5	NR	8.56	11.90	3.44	14.70	18.30	21.60	0.66	1.03	0.88	N/A	4.67	4.09	7.09	0.33
AVG			7.74	11.12	3.08	12.77	17.44	20.40	0.64	1.12	1.28		4.85	4.30	10.57	0.32
STD			0.82	0.94	0.94	1.94	2.63	2.92	0.02	0.10	0.94		0.83	0.61	3.36	0.01
CV			0.11	0.08	0.31	0.15	0.15	0.14	0.03	0.09	0.73		0.17	0.14	0.32	0.03

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 15	PCB 18	PCB 31	PCB 40	PCB 44	PCB 49	PCB 52	PCB 54	PCB 60	PCB 77	PCB 86	PCB 87	PCB 97	PCB 101	PCB 103
EBU-3	1	NR	14.90	16.10	4.65	20.70	23.80	26.50	0.57	1.11	1.50	N/A	6.32	5.98	16.80	0.28
EBU-3	2	NR	13.90	18.50	4.41	20.30	21.90	26.10	0.49	1.08	1.00	N/A	5.58	5.96	15.00	0.24
EBU-3	3	NR	14.60	18.60	4.75	22.10	22.90	27.10	0.63	1.29	1.39	N/A	7.19	6.88	17.60	0.32
EBU-3	4	NR	11.60	14.10	3.54	16.20	18.20	21.30	0.49	1.15	1.54	N/A	5.97	5.84	15.80	0.24
EBU-3	5	NR	10.20	15.90	3.48	15.80	18.90	21.20	0.57	1.22	1.52	N/A	5.69	5.63	16.20	0.28
AVG			13.04	16.64	4.17	19.02	21.14	24.44	0.55	1.17	1.39		6.15	6.06	16.28	0.27
STD			2.05	1.91	0.61	2.84	2.47	2.93	0.06	0.09	0.23		0.65	0.48	0.99	0.03
CV			0.16	0.11	0.15	0.15	0.12	0.12	0.11	0.07	0.16		0.11	0.08	0.06	0.11
EBU-4	1	NR	7.40	12.60	2.91	13.60	18.50	21.90	0.37	1.72	0.73	N/A	6.96	5.26	16.10	0.19
EBU-4	2	NR	8.85	14.80	3.48	16.50	21.90	26.30	0.47	1.86	0.88	N/A	8.24	6.17	17.00	0.24
EBU-4	3	NR	6.83	13.70	2.63	12.10	17.70	20.80	0.66	1.65	0.85	N/A	6.93	5.07	14.10	0.33
EBU-4	4	NR	7.70	13.10	2.55	13.00	19.90	25.30	0.66	1.74	0.91	N/A	8.54	6.97	18.40	0.33
EBU-4	5	NR	7.69	13.60	3.20	15.30	22.10	25.50	0.67	1.72	0.87	N/A	8.60	6.75	20.20	0.33
AVG			7.69	13.56	2.95	14.10	20.02	23.96	0.57	1.74	0.85		7.85	6.04	17.16	0.28
STD			0.74	0.82	0.39	1.78	1.97	2.44	0.14	0.08	0.07		0.84	0.86	2.31	0.07
CV			0.10	0.06	0.13	0.13	0.10	0.10	0.24	0.04	0.08		0.11	0.14	0.13	0.24
EBU-5	1	NR	2.63	4.90	1.11	6.31	9.15	12.50	0.67	1.11	0.57	N/A	4.89	3.69	8.90	0.33
EBU-5	2	NR	3.07	5.24	1.11	6.01	9.33	12.50	0.67	1.08	0.79	N/A	4.53	3.51	9.15	0.33
EBU-5	3	NR	3.76	7.03	1.53	7.74	10.50	14.70	0.62	0.93	0.67	N/A	5.04	3.75	10.10	0.31
EBU-5	4	NR	3.33	6.24	1.29	6.46	9.24	12.50	0.65	0.89	0.75	N/A	4.97	3.75	9.93	0.32
EBU-5	5	NR	4.02	6.35	1.46	7.74	11.30	15.20	0.66	1.11	0.59	N/A	5.15	4.26	12.10	0.33
AVG			3.36	5.95	1.30	6.85	9.90	13.48	0.65	1.02	0.67		4.92	3.79	10.04	0.33
STD			0.55	0.87	0.19	0.83	0.95	1.35	0.02	0.11	0.10		0.24	0.28	1.26	0.01
CV			0.16	0.15	0.15	0.12	0.10	0.10	0.03	0.10	0.14		0.05	0.07	0.13	0.03

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 105	PCB 114	PCB 118	PCB 121	PCB 128	PCB 129	PCB 138	PCB 141	PCB 143	PCB 151	PCB 153	PCB 154	PCB 155	PCB 156	PCB 159
CONTROL	1	0.32	0.32	0.32	0.32	0.32	0.63	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
CONTROL	2	0.33	0.33	0.33	0.33	0.33	0.67	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
CONTROL	3	0.32	0.32	0.32	0.32	0.32	0.64	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
AVG		0.32	0.32	0.32	0.32	0.32	0.65	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
STD		0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
CV		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
EBU-1	1	3.07	0.29	5.75	0.29	0.89	0.57	6.68	0.29	0.29	1.65	NR	0.29	0.29	NR	NR
EBU-1	2	5.93	0.33	10.50	0.33	1.86	0.66	14.10	0.62	0.33	3.51	NR	0.33	0.33	NR	NR
EBU-1	3	3.32	0.21	6.14	0.21	0.84	0.41	6.59	0.21	0.21	1.39	NR	0.21	0.21	NR	NR
EBU-1	4	4.32	0.20	7.32	0.20	1.49	0.39	8.85	NR	0.20	2.20	NR	0.20	0.20	NR	NR
EBU-1	5	3.22	0.31	5.77	0.31	0.88	0.61	7.29	NR	0.31	1.65	NR	0.31	0.31	NR	NR
AVG		3.97	0.27	7.10	0.27	1.19	0.53	8.70	0.37	0.27	2.08		0.27	0.27		
STD		1.20	0.06	2.01	0.06	0.46	0.12	3.15	0.22	0.06	0.85		0.06	0.06		
CV		0.30	0.23	0.28	0.23	0.39	0.23	0.36	0.59	0.23	0.41		0.23	0.23		
EBU-2	1	2.64	0.33	4.06	0.33	0.73	0.66	7.30	NR	0.33	1.57	NR	0.33	0.33	NR	NR
EBU-2	2	2.93	0.31	5.26	0.31	1.08	0.62	8.31	NR	0.31	2.04	NR	0.31	0.31	NR	NR
EBU-2	3	2.60	0.31	4.90	0.31	0.68	0.63	6.52	NR	0.31	1.60	NR	0.31	0.31	NR	NR
EBU-2	4	3.99	0.31	6.87	0.31	1.13	0.62	9.84	NR	0.31	2.44	NR	0.31	0.31	NR	NR
EBU-2	5	2.74	0.33	6.07	0.33	1.05	0.66	9.36	NR	0.33	2.37	NR	0.33	0.33	NR	NR
AVG		2.98	0.32	5.43	0.32	0.93	0.64	8.27		0.32	2.00		0.32	0.32		
STD		0.58	0.01	1.08	0.01	0.21	0.02	1.38		0.01	0.41		0.01	0.01		
CV		0.19	0.03	0.20	0.03	0.23	0.03	0.17		0.03	0.21		0.03	0.03		

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 105	PCB 114	PCB 118	PCB 121	PCB 128	PCB 129	PCB 138	PCB 141	PCB 143	PCB 151	PCB 153	PCB 154	PCB 155	PCB 156	PCB 159
EBU-3	1	3.88	0.78	9.39	0.28	1.29	0.57	11.00	NR	0.28	3.24	NR	0.28	0.28	NR	NR
EBU-3	2	3.49	0.24	9.40	0.24	1.22	0.49	8.13	NR	0.24	2.96	NR	0.24	0.24	NR	NR
EBU-3	3	4.28	0.32	11.70	0.32	1.58	0.63	10.20	NR	0.32	3.41	NR	0.32	0.32	NR	NR
EBU-3	4	3.93	0.24	9.87	0.24	1.65	0.49	9.06	NR	0.24	2.68	NR	0.24	0.24	NR	NR
EBU-3	5	3.68	0.28	9.12	0.28	1.28	0.57	9.30	NR	0.28	3.66	NR	0.28	0.28	NR	NR
AVG		3.85	0.37	9.90	0.27	1.40	0.55	9.54		0.27	3.19		0.27	0.27		
STD		0.30	0.23	1.04	0.03	0.20	0.06	1.10		0.03	0.38		0.03	0.03		
CV		0.08	0.61	0.11	0.11	0.14	0.11	0.12		0.11	0.12		0.11	0.11		
EBU-4	1	4.59	0.19	8.57	0.19	1.30	0.55	8.20	NR	0.19	2.47	NR	0.19	0.19	NR	NR
EBU-4	2	4.79	0.24	10.90	0.24	1.28	0.47	8.92	NR	0.24	2.51	NR	0.24	0.24	NR	NR
EBU-4	3	4.14	0.33	8.06	0.33	1.05	0.66	8.45	NR	0.33	1.94	NR	0.33	0.33	NR	NR
EBU-4	4	4.97	0.33	8.68	0.33	1.79	0.66	11.70	NR	0.33	2.93	NR	0.33	0.33	NR	NR
EBU-4	5	5.23	0.33	8.93	0.33	1.54	0.67	12.20	NR	0.33	2.88	NR	0.33	0.33	NR	NR
AVG		4.74	0.28	9.03	0.28	1.39	0.60	9.89		0.28	2.55		0.28	0.28		
STD		0.41	0.07	1.09	0.07	0.28	0.09	1.90		0.07	0.40		0.07	0.07		
CV		0.09	0.24	0.12	0.24	0.20	0.14	0.19		0.24	0.16		0.24	0.24		
EBU-5	1	3.14	0.33	4.03	0.33	1.04	0.67	9.84	NR	0.33	2.26	NR	0.33	0.33	NR	NR
EBU-5	2	3.22	0.33	3.10	0.33	1.00	0.67	9.23	NR	0.33	2.23	NR	0.33	0.33	NR	NR
EBU-5	3	3.21	0.31	4.42	0.31	1.02	0.62	5.58	NR	0.31	1.81	NR	0.31	0.31	NR	NR
EBU-5	4	3.59	0.32	4.13	0.32	1.04	0.65	9.25	NR	0.32	1.82	NR	0.32	0.32	NR	NR
EBU-5	5	3.42	0.33	4.52	0.33	1.14	0.66	9.74	NR	0.33	2.16	NR	0.33	0.33	NR	NR
AVG		3.32	0.33	4.04	0.33	1.05	0.65	8.73		0.33	2.06		0.33	0.33		
STD		0.19	0.01	0.56	0.01	0.05	0.02	1.78		0.01	0.22		0.01	0.01		
CV		0.06	0.03	0.14	0.03	0.05	0.03	0.20		0.03	0.11		0.03	0.03		

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 167	PCB 171	PCB 173	PCB 180	PCB 182	PCB 183	PCB 185	PCB 187	PCB 189	PCB 191	PCB 194	PCB 195	PCB 196	PCB 199	PCB 201
CONTROL	1	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.59	0.32	0.32	0.32	0.32	0.32	0.32	0.32
CONTROL	2	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.61	0.33	0.33	0.33	0.33	0.33	0.33	0.33
CONTROL	3	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.62	0.32	0.32	0.32	0.32	0.32	0.32	0.32
AVG		0.32	0.32	0.32	0.32	0.32	0.32		0.61	0.32	0.32	0.32	0.32	0.32	0.32	0.32
STD		0.01	0.01	0.01	0.01	0.01	0.01		0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
CV		0.03	0.03	0.03	0.03	0.03	0.03		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
EBU-1	1	0.29	NR	0.29	1.03	0.29	0.36	0.36	NR	0.29	0.29	0.29	0.29	0.29	0.29	0.45
EBU-1	2	0.33	NR	0.33	1.77	0.33	0.73	0.58	NR	0.33	0.33	0.33	0.33	0.33	0.33	1.06
EBU-1	3	0.21	NR	0.21	1.14	0.21	0.36	0.31	NR	0.21	0.21	0.21	0.21	0.21	0.21	0.46
EBU-1	4	0.20	NR	0.20	1.47	0.20	0.64	0.39	NR	0.20	0.20	0.23	0.20	0.20	0.20	0.62
EBU-1	5	0.31	NR	0.31	1.31	0.31	0.31	0.39	NR	0.31	0.31	0.31	0.31	0.31	0.31	0.46
AVG		0.27		0.27	1.34	0.27	0.48	0.41		0.27	0.27	0.27	0.27	0.27	0.27	0.61
STD		0.06		0.06	0.29	0.06	0.19	0.10		0.06	0.06	0.05	0.06	0.06	0.06	0.26
CV		0.23		0.23	0.22	0.23	0.40	0.25		0.23	0.23	0.19	0.23	0.23	0.23	0.43
EBU-2	1	0.33	NR	0.33	0.79	0.33	0.33	0.43	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.44
EBU-2	2	0.31	NR	0.31	0.85	0.31	0.39	0.31	NR	0.31	0.31	0.31	0.31	0.31	0.31	0.59
EBU-2	3	0.31	NR	0.31	0.89	0.31	0.31	0.31	NR	0.31	0.31	0.31	1.17	0.31	0.31	0.44
EBU-2	4	0.31	NR	0.31	1.07	0.38	0.44	0.38	NR	0.31	0.31	0.31	0.31	0.31	0.31	0.76
EBU-2	5	0.33	NR	0.33	4.61	0.33	1.62	0.44	NR	0.33	0.33	1.14	0.62	0.82	0.33	1.31
AVG		0.32		0.32	1.64	0.33	0.62	0.37		0.32	0.32	0.48	0.55	0.42	0.32	0.71
STD		0.01		0.01	1.66	0.03	0.56	0.06		0.01	0.01	0.37	0.37	0.23	0.01	0.36
CV		0.03		0.03	1.01	0.08	0.91	0.17		0.03	0.03	0.77	0.68	0.54	0.03	0.51

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 167	PCB 171	PCB 173	PCB 180	PCB 182	PCB 183	PCB 185	PCB 187	PCB 189	PCB 191	PCB 194	PCB 195	PCB 196	PCB 199	PCB 201
EBU-3	1	0.28	NR	0.28	1.60	0.28	1.05	0.89	NR	0.28	0.28	0.28	0.28	0.28	0.28	0.28
EBU-3	2	0.24	NR	0.24	1.09	0.24	0.51	0.24	NR	0.24	0.24	0.24	0.24	0.24	0.24	1.53
EBU-3	3	0.32	NR	0.32	1.57	0.32	0.63	0.36	NR	0.32	0.32	0.36	0.32	0.32	0.32	1.07
EBU-3	4	0.24	NR	0.24	1.21	0.24	0.43	0.33	NR	0.24	0.24	0.35	0.24	0.24	0.24	0.91
EBU-3	5	0.28	NR	0.28	0.90	0.28	0.49	0.32	NR	0.28	0.28	0.28	0.28	0.28	0.28	0.95
AVG		0.27		0.27	1.27	0.27	0.62	0.43		0.27	0.27	0.30	0.27	0.27	0.27	0.95
STD		0.03		0.03	0.30	0.03	0.25	0.26		0.03	0.03	0.05	0.03	0.03	0.03	0.45
CV		0.11		0.11	0.24	0.11	0.40	0.61		0.11	0.11	0.16	0.11	0.11	0.11	0.47
EBU-4	1	0.65	NR	0.19	2.38	0.81	1.13	0.29	NR	0.19	0.19	0.19	0.19	0.19	0.25	0.55
EBU-4	2	0.60	NR	0.24	1.64	0.24	1.30	0.55	NR	0.24	0.24	0.24	0.26	0.24	0.24	1.12
EBU-4	3	0.67	NR	0.33	1.53	0.33	0.55	0.36	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.67
EBU-4	4	0.56	NR	0.33	1.80	0.33	0.97	0.48	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.83
EBU-4	5	0.59	NR	0.33	1.62	0.33	0.75	0.55	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.88
AVG		0.61		0.28	1.79	0.41	0.94	0.45		0.28	0.28	0.28	0.29	0.28	0.30	0.81
STD		0.05		0.07	0.34	0.23	0.30	0.12		0.07	0.07	0.07	0.06	0.07	0.05	0.22
CV		0.07		0.24	0.19	0.56	0.32	0.26		0.24	0.24	0.23	0.22	0.24	0.16	0.27
EBU-5	1	0.40	NR	0.33	1.06	0.33	0.59	0.33	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.95
EBU-5	2	0.33	NR	0.33	1.69	0.33	0.82	0.47	NR	0.33	0.33	0.33	0.33	0.33	0.33	0.87
EBU-5	3	0.31	NR	0.31	1.02	0.31	0.59	0.39	NR	0.31	0.31	0.31	0.31	0.31	0.31	0.71
EBU-5	4	0.32	NR	0.32	1.12	0.32	0.44	0.38	NR	0.32	0.32	0.32	0.32	0.32	0.32	0.83
EBU-5	5	0.33	NR	0.33	0.95	0.33	0.52	0.62	NR	0.33	0.33	0.33	0.33	0.33	0.33	1.03
AVG		0.34		0.33	1.17	0.33	0.59	0.44		0.33	0.33	0.33	0.33	0.33	0.33	0.88
STD		0.04		0.01	0.30	0.01	0.14	0.11		0.01	0.01	0.01	0.01	0.01	0.01	0.12
CV		0.10		0.03	0.26	0.03	0.24	0.26		0.03	0.03	0.03	0.03	0.03	0.03	0.14

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 202	PCB 203	PCB 205	PCB 206	PCB 207	PCB 208	Sum PCB
CONTROL	1	0.32	0.32	0.32	0.32	0.32	0.32	
CONTROL	2	0.33	0.33	0.33	0.33	0.33	0.33	
CONTROL	3	0.32	0.32	0.32	0.32	0.32	0.32	
AVG		0.32	0.32	0.32	0.32	0.32	0.32	**17.52**
STD		0.01	0.01	0.01	0.01	0.01	0.01	
CV		0.03	0.03	0.03	0.03	0.03	0.03	
EBU-1	1	0.29	0.27	0.29	0.47	0.29	0.33	
EBU-1	2	0.33	0.77	0.33	0.91	0.33	0.76	
EBU-1	3	0.21	0.27	0.21	0.51	0.21	0.33	
EBU-1	4	0.20	0.34	0.20	0.61	0.20	0.49	
EBU-1	5	0.31	0.31	0.31	0.49	0.31	0.40	
AVG		0.27	0.39	0.27	0.60	0.27	0.46	**126.67**
STD		0.06	0.21	0.06	0.18	0.06	0.18	
CV		0.23	0.55	0.23	0.31	0.22	0.39	
EBU-2	1	0.33	0.33	0.33	0.54	0.33	0.44	
EBU-2	2	0.31	0.31	0.31	0.65	0.31	0.59	
EBU-2	3	0.31	0.33	0.31	0.31	0.31	0.63	
EBU-2	4	0.31	0.42	0.31	1.05	0.31	0.72	
EBU-2	5	0.33	0.90	0.33	0.90	0.33	0.58	
AVG		0.32	0.46	0.32	0.69	0.32	0.59	**126.89**
STD		0.01	0.25	0.01	0.29	0.01	0.10	
CV		0.03	0.55	0.03	0.42	0.03	0.17	

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - PCB Congeners in *L. variegatus*

TABLE 5

SEDIMENT	REP	PCB 202	PCB 203	PCB 205	PCB 206	PCB 207	PCB 208	Sum PCB
EBU-3	1	0.28	0.50	0.28	1.18	0.28	0.97	
EBU-3	2	0.29	0.57	0.24	1.05	0.24	0.87	
EBU-3	3	0.32	0.55	0.95	1.46	0.17	1.10	
EBU-3	4	0.24	0.48	0.24	1.21	0.24	0.92	
EBU-3	5	0.28	0.51	0.28	1.26	0.28	1.00	
AVG		0.28	0.52	0.40	1.23	0.24	0.97	**169.63**
STD		0.03	0.04	0.31	0.15	0.04	0.09	
CV		0.09	0.07	0.77	0.12	0.19	0.09	
EBU-4	1	0.19	0.32	0.19	0.52	0.19	0.47	
EBU-4	2	0.24	0.53	0.24	1.19	0.24	0.68	
EBU-4	3	0.33	0.37	0.33	0.66	0.33	0.55	
EBU-4	4	0.33	0.36	0.33	0.78	0.33	0.65	
EBU-4	5	0.33	0.45	0.33	0.85	0.33	0.64	
AVG		0.28	0.41	0.28	0.80	0.28	0.60	**156.07**
STD		0.07	0.08	0.07	0.25	0.07	0.09	
CV		0.24	0.21	0.24	0.31	0.23	0.14	
EBU-5	1	0.33	0.42	0.33	1.45	0.33	1.06	
EBU-5	2	0.33	0.38	0.33	1.16	0.33	0.98	
EBU-5	3	0.31	0.45	0.31	0.93	0.35	0.71	
EBU-5	4	0.32	0.40	0.32	1.24	0.32	0.97	
EBU-5	5	0.33	0.45	0.33	1.33	0.33	1.10	
AVG		0.33	0.42	0.33	1.22	0.33	0.96	**93.35**
STD		0.01	0.03	0.01	0.20	0.01	0.15	
CV		0.03	0.07	0.03	0.16	0.03	0.16	

=BRL
=J

BRL values (<) were divided by three

Results based upon wet weights - ug/k

Eighteenmile Creek AOC - Metals in *L. variegatus*

TABLE 6

SEDIMENT	REP	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL
CONTROL	1	0.047	1.390	0.028	0.058	1.3	5.4	3.0	1.9	0.68	0.008	0.008
CONTROL	2	0.008	0.843	0.008	0.047	0.3	4.7	2.2	1.0	0.61	0.008	0.008
CONTROL	3	0.008	1.120	0.008	0.065	0.1	4.6	1.3	1.2	0.65	0.008	0.008
AVG		0.021	1.118	0.015	0.056	0.6	4.9	2.2	1.4	0.64	0.008	0.008
STD		0.022	0.274	0.011	0.009	0.7	0.4	0.8	0.5	0.04	0.000	0.000
CV		1.05	0.24	0.76	0.16	1.20	0.09	0.38	0.34	0.06	0.00	0.00
EBU-1	1	0.029	1.090	0.036	0.192	5.2	10.1	7.7	5.3	0.43	0.008	0.191
EBU-1	2	0.057	1.160	0.034	0.112	6.9	10.4	8.9	4.3	0.55	0.008	0.008
EBU-1	3	0.008	0.410	0.056	0.247	5.9	13.2	1.5	7.5	0.39	0.008	0.026
EBU-1	4	0.008	0.769	0.008	0.055	1.9	4.3	3.9	2.1	0.44	0.008	0.046
EBU-1	5	0.028	1.040	0.040	0.166	6.2	11.0	13.4	4.3	0.47	0.008	0.008
AVG		0.026	0.894	0.035	0.154	5.2	9.8	7.1	4.7	0.46	0.008	0.056
STD		0.020	0.308	0.017	0.074	1.9	3.3	4.6	1.9	0.06	0.000	0.077
CV		0.77	0.35	0.50	0.48	0.37	0.34	0.65	0.41	0.13	0.00	1.38
EBU-2	1	0.035	1.240	0.048	0.297	11.2	19.4	15.2	10.2	0.49	0.008	0.036
EBU-2	2	0.088	0.954	0.028	0.155	4.1	9.1	10.0	3.9	0.45	0.029	0.008
EBU-2	3	0.091	1.310	0.054	0.313	8.1	19.1	20.8	6.9	0.49	0.008	0.034
EBU-2	4	0.008	0.756	0.008	0.520	2.2	5.9	5.4	2.0	0.51	0.037	0.008
EBU-2	5	0.106	1.940	0.080	0.461	13.3	24.3	30.4	19.6	0.48	0.033	0.056
AVG		0.066	1.240	0.044	0.349	7.8	15.6	16.4	8.5	0.48	0.023	0.028
STD		0.042	0.450	0.027	0.144	4.7	7.7	9.7	6.9	0.02	0.014	0.020
CV		0.64	0.36	0.62	0.41	0.60	0.50	0.60	0.81	0.05	0.60	0.71

=BRL

BRL values (<) were divided by three

Eighteenmile Creek AOC - Metals in *L. variegatus*

TABLE 6

SEDIMENT	REP	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL
EBU-3	1	0.064	1.060	0.042	0.320	15.9	26.6	29.5	15.1	0.04	0.028	0.032
EBU-3	2	0.142	1.340	0.054	0.310	15.0	23.4	26.2	22.0	0.41	0.052	0.045
EBU-3	3	0.043	1.220	0.049	0.282	13.7	21.3	22.8	20.0	0.38	0.047	0.041
EBU-3	4	0.049	1.520	0.048	0.387	21.3	33.8	42.8	27.5	0.45	0.043	0.054
EBU-3	5	0.026	1.090	0.060	0.297	12.5	22.1	28.1	16.8	0.40	0.031	0.035
AVG		0.065	1.246	0.051	0.319	15.7	25.4	29.9	20.3	0.34	0.040	0.041
STD		0.045	0.189	0.007	0.040	3.4	5.1	7.6	4.9	0.16	0.010	0.008
CV		0.70	0.15	0.13	0.13	0.22	0.20	0.26	0.24	0.49	0.25	0.20
EBU-4	1	0.105	1.050	0.059	0.186	15.2	19.5	40.6	6.2	0.38	0.032	0.051
EBU-4	2	0.054	0.843	0.041	0.141	5.3	18.2	20.1	4.6	0.40	0.008	0.008
EBU-4	3	0.057	1.690	0.109	0.321	29.6	26.2	30.8	10.6	0.42	0.039	0.041
EBU-4	4	0.008	0.916	0.008	0.061	5.4	6.5	6.8	2.2	0.47	0.008	0.008
EBU-4	5	0.008	0.833	0.029	0.068	2.5	8.0	8.7	2.8	0.44	0.059	0.008
AVG		0.047	1.066	0.049	0.155	11.6	15.7	21.4	5.3	0.42	0.029	0.023
STD		0.040	0.359	0.038	0.106	11.2	8.3	14.4	3.4	0.03	0.022	0.021
CV		0.87	0.34	0.77	0.68	0.96	0.53	0.67	0.64	0.08	0.74	0.90
EBU-5	1	0.153	0.793	0.008	0.083	6.4	4.6	4.5	1.2	0.31	0.326	0.008
EBU-5	2	0.048	0.730	0.034	0.100	2.9	6.1	8.0	3.4	0.25	0.008	0.008
EBU-5	3	0.034	1.020	0.083	0.197	16.4	11.2	16.3	5.6	0.21	0.077	0.064
EBU-5	4	0.041	1.030	0.031	0.230	15.9	8.6	22.7	2.5	0.36	0.008	0.008
EBU-5	5	0.008	0.844	0.027	0.073	13.8	6.1	6.3	2.1	0.38	0.008	0.008
AVG		0.057	0.883	0.037	0.137	11.1	7.3	11.6	2.9	0.30	0.086	0.019
STD		0.056	0.135	0.028	0.072	6.1	2.6	7.7	1.7	0.07	0.138	0.025
CV		0.98	0.15	0.75	0.53	0.55	0.36	0.67	0.57	0.24	1.61	1.28

=BRL

BRL values (<) were divided by three

Eighteenmile Creek AOC - Metals in *L. variegatus*

TABLE 6

SEDIMENT	REP	ZN	AL	BA	CA	CO	FE	MG	MN	K	NA	V	HG
CONTROL	1	37.0	412	122.0	1260	0.67	1330	692	33.8	1200	772	1.45	0.03
CONTROL	2	38.2	158	118.0	365	0.45	764	314	15.5	1330	758	0.57	0.04
CONTROL	3	36.1	236	31.1	738	0.56	485	537	32.5	1340	691	1.09	0.19
AVG		37.1	268.7	90.4	788	0.56	860	514	27.3	1290	740	1.04	0.09
STD		1.1	130.1	51.4	450	0.11	431	190	10.2	78	43	0.44	0.09
CV		0.03	0.48	0.57	0.57	0.19	0.50	0.37	0.37	0.06	0.06	0.43	1.03
EBU-1	1	80.0	279	26.9	1360	1.04	1270	330	35.3	791	495	1.61	0.09
EBU-1	2	58.9	265	73.6	1300	0.77	1190	331	27.4	1290	866	0.99	11.50
EBU-1	3	96.2	342	13.9	4100	1.61	397	464	97.6	628	424	2.11	0.11
EBU-1	4	39.4	145	56.4	723	0.39	676	200	13.2	1110	728	0.52	0.08
EBU-1	5	75.3	431	55.9	1420	0.93	1580	362	34.1	986	629	1.73	0.07
AVG		70.0	292	45.3	1781	0.95	1023	337	41.5	961	628	1.39	2.37
STD		21.6	105	24.3	1326	0.44	477	94	32.6	260	177	0.63	5.10
CV		0.31	0.36	0.54	0.74	0.47	0.47	0.28	0.78	0.27	0.28	0.45	2.15
EBU-2	1	127.0	433	30.6	1070	1.47	1770	362	24.4	917	582	1.82	0.12
EBU-2	2	73.7	284	64.9	584	0.71	1100	258	14.9	1070	702	1.06	0.09
EBU-2	3	96.4	462	63.6	1110	1.08	1840	377	26.5	986	616	1.91	0.20
EBU-2	4	44.6	254	81.9	323	0.43	720	245	10.4	1330	976	0.55	0.04
EBU-2	5	170.0	676	48.4	2310	2.31	3210	537	45.8	719	431	3.25	0.11
AVG		102.3	422	57.9	1079	1.20	1728	356	24.4	1004	661	1.72	0.11
STD		48.4	168	19.3	764	0.73	951	117	13.7	223	201	1.02	0.05
CV		0.47	0.40	0.33	0.71	0.61	0.55	0.33	0.56	0.22	0.30	0.60	0.49

=BRL

BRL values (<) were divided by three

Eighteenmile Creek AOC - Metals in *L. variegatus*

TABLE 6

SEDIMENT	REP	ZN	AL	BA	CA	CO	FE	MG	MN	K	NA	V	HG
EBU-3	1	152.0	386	76.0	861	1.42	1690	343	33.0	1120	591	1.99	0.15
EBU-3	2	168.0	369	61.3	1340	1.75	1920	404	44.1	948	573	2.43	0.12
EBU-3	3	159.0	212	55.7	1220	1.59	1750	368	40.1	863	521	2.21	0.23
EBU-3	4	214.0	442	70.6	1200	2.40	2280	452	45.8	1050	615	2.85	0.20
EBU-3	5	171.0	638	80.1	1200	1.62	1930	447	37.2	1170	643	2.12	0.17
AVG		172.8	409	68.7	1164	1.76	1914	403	40.0	1030	589	2.32	0.17
STD		24.2	154	10.1	179	0.38	230	48	5.2	125	46	0.34	0.04
CV		0.14	0.38	0.15	0.15	0.22	0.12	0.12	0.13	0.12	0.08	0.15	0.25
EBU-4	1	74.0	460	55.8	2510	2.48	2510	379	45.8	849	500	2.48	0.11
EBU-4	2	71.0	353	67.1	1690	0.89	1770	342	31.1	1030	679	1.74	0.06
EBU-4	3	117.0	886	49.7	3600	1.86	4220	629	89.8	767	435	4.66	0.13
EBU-4	4	96.6	510	88.2	554	0.54	1070	283	17.6	1350	899	0.79	0.02
EBU-4	5	107.0	718	87.5	601	0.70	1230	304	28.6	1290	835	0.99	0.04
AVG		93.1	585	69.7	1791	1.29	2160	387	42.6	1057	670	2.13	0.07
STD		20.2	214	17.7	1299	0.84	1282	140	28.2	259	202	1.56	0.04
CV		0.22	0.37	0.25	0.73	0.65	0.59	0.36	0.66	0.24	0.30	0.73	0.61
EBU-5	1	39.0	99.6	73.1	328	0.30	651	212	15.6	1190	656	0.71	0.03
EBU-5	2	51.3	246	41.7	874	0.58	1520	250	31.7	674	417	1.67	0.04
EBU-5	3	143.0	1460	31.2	2280	1.00	2190	536	61.3	618	293	2.82	0.03
EBU-5	4	136.0	609	69.4	2770	0.57	1210	341	34.8	1100	596	1.36	0.03
EBU-5	5	96.0	744	99.4	536	0.63	1240	371	30.1	1370	771	1.10	0.01
AVG		93.1	632	63.0	1358	0.62	1362	342	34.7	990	547	1.53	0.03
STD		47.5	532	27.1	1097	0.25	560	126	16.6	330	191	0.80	0.01
CV		0.51	0.84	0.43	0.81	0.41	0.41	0.37	0.48	0.33	0.35	0.52	0.35

=BRL

BRL values (<) were divided by three

APPENDIX H

EIGHTEENMILE CREEK AOC

DIOXIN DATA PACKAGE

Return to Navigator

SEVERN TRENT STL

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921

Tel: 865 291 3000 Fax: 865 584 4315
www.stl-inc.com

ANALYTICAL REPORT

Omaha

Lot #: H3I060138

Laura Percifield

US Army Corp of Engineers
420 South 18th Street
Omaha, NE 68102-2586

SEVERN TRENT LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

September 24, 2003

ANALYTICAL METHODS SUMMARY

H3I060138

PARAMETER	ANALYTICAL METHOD
Dibenzodioxins and Dibenzofurans, HRGC/HRMS	SW846 8290
Percent Moisture	MCAWW 160.3 MOD

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

H3I060138

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FXQVR	001	M030916-023	08/26/03	
FXQVT	002	M030916-024	08/26/03	
FXQVV	003	M030916-025	08/26/03	
FXQV0	004	M030916-026	08/26/03	
FXQV1	005	M030916-027	08/26/03	
FXQV2	006	M030916-028	08/26/03	
FXQV3	007	M030916-029	08/26/03	
FXQV4	008	M030916-030	08/26/03	
FXQV6	009	M030916-031	08/26/03	
FXQV7	010	M030916-032	08/26/03	
FXQV9	011	M030916-033	08/26/03	
FXQWA	012	M030916-034	08/26/03	
FXQWC	013	M030916-035	08/26/03	
FXQWD	014	M030916-036	08/26/03	
FXQWE	015	M030916-037	08/26/03	
FXQWF	016	M030916-038	08/26/03	
FXQWG	017	M030916-039	08/26/03	
FXQWJ	018	M030925-001	08/27/03	
FXQWK	019	M030925-002	08/27/03	
FXQWL	020	M030925-003	08/27/03	
FXQWN	021	M030925-004	08/27/03	
FXQWP	022	M030925-005	08/27/03	
FXQWQ	023	M030925-006	08/27/03	
FXQWR	024	M030925-007	08/27/03	
FXQWT	025	M030925-008	08/27/03	
FXQWV	026	M030925-009	08/27/03	
FXQWW	027	M030925-010	08/27/03	
FXQWX	028	M030925-011	08/27/03	
FXQW1	029	M030925-012	08/27/03	
FXQW2	030	M030925-013	08/27/03	
FXQW4	031	M030925-014	08/27/03	
FXQW5	032	M030925-015	08/27/03	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H3I060138

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

QC Batch 3251409

All QC criteria were met with the following exceptions:

The following samples exhibited internal standard recoveries that were outside QC limits (40-135%). The 10:1 internal standard signal-to-noise ratio criterion was met in all cases. When properly applied, results from isotope dilution analyses are independent of internal standard percent recoveries. Therefore, since the internal standard signal-to-noise ratios were sufficient, the analysis results are not adversely affected:

M030916-027
13C-2378-TCDD-37%
13C-2378-TCDF-34%

M030916-028
13C-2378-TCDD-25%
13C-2378-TCDF-21%

STL Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Cert. # 03-049-0, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Cert. #PH-0223, Florida DOH Cert. #E87177, Georgia DNR Cert. #906, Hawaii DOH, Illinois EPA Cert. # 000687, Indiana DOH Cert. #C-TN-02, Kansas DHE Cert. # E-10349, Kentucky DEP Lab ID #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH Cert. #LA030024, Maryland DHMH Cert. #277, Massachusetts DEP Cert. #M-TN009, Michigan DEQ Lab ID #9933, New Jersey DEP Cert. #TN001, New York DOH Lab #10781, North Carolina DPH Lab ID #21705, North Carolina DEHNR Cert. #64, Oklahoma DEQ ID #9415, Pennsylvania DEP Cert. # 68-576, South Carolina DHEC Lab ID #84001001, Tennessee DOH Lab ID #02014, Utah DOH Cert. #QUAN3, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, Wisconsin DNR Lab ID #998044300, US Army Corps of Engineers, Naval Facilities Engineering Service Center, US EPA Perchlorate Approval and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

The matrix spike and matrix spike duplicate of sample M030916-023 displayed the following native dioxin/furans outside of percent recovery limits:

2378-TCDD
MS 134% (Limit 70 – 116%)
MSD 155% (Limit 70 – 116%)

OCDD
MS 207% (Limit 33 – 154%)
MSD 310% (Limit 33 – 154%)

123478- HxCDF
MSD 118% (Limit 74 – 114%)

1234678-HpCDF
MSD 188% (Limit 51 – 133%)

OCDF
MSD 204% (Limit 52 – 137%)

The matrix spike and matrix spike duplicate of sample M030916-023 displayed the following native dioxin/furans outside of relative percent difference limits (0 – 20%):

OCDD 29%
1234678-HpCDF 30%
OCDF 68%

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

All positive 2378-TCDF results were confirmed on a DB-225 chromatography column. The analysis of the sample extracts M030916-023 and M030916-026 on the DB-225 column exhibited co-eluting interferences which prevented accurate results. The 2378-TCDF results reported were obtained from the Rtx-5 analysis. The Rtx-5 column is not isomer specific for 2378-TCDF; therefore, the reported value for 2378-TCDF is considered the highest amount of 2378-TCDF present.

QC Batch 3252134

The following sample exhibited an internal standard recovery that was outside QC limits (40-135%). The 10:1 internal standard signal-to-noise ratio criterion was met in all cases. When properly applied, results from isotope dilution analyses are independent of internal standard percent recoveries. Therefore, since the internal standard signal-to-noise ratios were sufficient, the analysis results are not adversely affected:

M030925-015
13C-OCDD 38%

The matrix spike and matrix spike duplicate of sample M030925-002 displayed the following native furan outside of percent recovery limits:

OCDF
MS 40% (Limit 52 – 137%)
MSD 41% (Limit 52 – 137%)

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

Comments:

All positive 2378-TCDF results were confirmed on a DB-225 chromatography column. The analysis of the sample extract M030925-002, M030925-004 and M030925-010 on the DB-225 column exhibited co-eluting interferences which prevented accurate results. The 2378-TCDF results reported were obtained from the Rtx-5 analysis. The Rtx-5 column is not isomer specific for 2378-TCDF; therefore, the reported value for 2378-TCDF is considered the highest amount of 2378-TCDF present.

Qualifiers

The following flags are used to qualify results for chlorinated dioxin and furan results:

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report the ML is qualitatively defined as described above, and quantitatively defined as follows: **Minimum Level:** The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.

Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

Qualifiers (continued)

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

E – The reported result is an estimate. The amount reported is above the UCL described below.

The E qualifier is applied on the basis of the **Upper Calibration Level (UCL)**. The quantitative definition of the UCL is listed below:

Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Example: The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this examples all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result in a B qualifier on all associated samples.

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

Qualifiers (continued)

If the blank has analytes present above the ML (described above) the need for corrective action beyond qualifying the associated data is evaluated. The determination is made whether the amount in the blank is less than 5% of the lowest amount in associated client samples or regulatory limit. If this is the case, sample processing may continue with the qualification of the data. If the amount in the blank is greater than 5% of the lowest amount in associated client samples or regulatory limit, corrective action must be taken.

The corrective actions may include extracting a second aliquot of sample if available, or notifying the client to assess the impact on the project objectives.

Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:
- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- Polychlorinated dibenzofuran purity. No peak can be identified as a polychlorinated dibenzofuran if a polychlorinated diphenyl ether peak maximizes within +/- 2 seconds of the furan candidate.

PROJECT NARRATIVE
H3I060138

Quality Control (continued)

Qualifiers (continued)

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer.

X – Other. See explanation in narrative.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-023

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-001 Work Order #...: FXQVR1AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 42

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	7.7 Q	0.54	pg/g	SW846 8290
Total TCDD	12 Q	0.54	pg/g	SW846 8290
1,2,3,7,8-PeCDD	2.1 Q,J	0.27	pg/g	SW846 8290
Total PeCDD	11 Q,J	0.27	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	0.52 Q,J	0.25	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	2.9 J	0.26	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	1.4 Q,J	0.24	pg/g	SW846 8290
Total HxCDD	22 S,J,Q	0.25	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	35 B	0.30	pg/g	SW846 8290
Total HpCDD	68 B	0.30	pg/g	SW846 8290
OCDD	320 B	0.21	pg/g	SW846 8290
2,3,7,8-TCDF	3.4	0.46	pg/g	SW846 8290
Total TCDF	49 Q	0.46	pg/g	SW846 8290
1,2,3,7,8-PeCDF	1.3 Q,J	0.20	pg/g	SW846 8290
2,3,4,7,8-PeCDF	3.1 J	0.16	pg/g	SW846 8290
Total PeCDF	41 Q	0.17	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	16	0.14	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	2.7 J	0.15	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	0.98 Q,J	0.16	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	0.13 Q,J	0.17	pg/g	SW846 8290
Total HxCDF	53 Q	0.16	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	54	0.21	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	3.8 J	0.21	pg/g	SW846 8290
Total HpCDF	73	0.21	pg/g	SW846 8290
OCDF	160 B	0.19	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-023

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-001 **Work Order #...:** FXQVR1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	85	(40 - 135)
13C-1,2,3,7,8-PeCDD	92	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	84	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	86	(40 - 135)
13C-OCDD	72	(40 - 135)
13C-2,3,7,8-TCDF	89	(40 - 135)
13C-1,2,3,7,8-PeCDF	86	(40 - 135)
13C-2,3,4,7,8-PeCDF	87	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	84	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	81	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	85	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	81	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	87	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-024

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-002 Work Order #...: FXQVT1AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 41

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	54	0.78	pg/g	SW846 8290
Total TCDD	77 Q	0.78	pg/g	SW846 8290
1,2,3,7,8-PeCDD	5.8 Q,J	0.45	pg/g	SW846 8290
Total PeCDD	42 Q	0.45	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	2.0 Q,J	0.36	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	8.2 Q,J	0.37	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	4.8 J	0.34	pg/g	SW846 8290
Total HxCDD	73 S,Q	0.35	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	140 S,B	0.51	pg/g	SW846 8290
Total HpCDD	310 S,B	0.51	pg/g	SW846 8290
OCDD	1400 B	0.49	pg/g	SW846 8290
Total TCDF	150 Q	0.64	pg/g	SW846 8290
1,2,3,7,8-PeCDF	4.3 J	0.28	pg/g	SW846 8290
2,3,4,7,8-PeCDF	7.8 J	0.24	pg/g	SW846 8290
Total PeCDF	130 Q	0.26	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	55	0.25	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	10	0.26	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	3.6 J	0.30	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	0.43 Q,J	0.31	pg/g	SW846 8290
Total HxCDF	190 Q	0.28	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	190	0.34	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	11	0.35	pg/g	SW846 8290
Total HpCDF	300	0.34	pg/g	SW846 8290
OCDF	550 B	0.31	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-024

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-002 **Work Order #...:** FXQVT1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	78	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	82	(40 - 135)
13C-OCDD	70	(40 - 135)
13C-2,3,7,8-TCDF	84	(40 - 135)
13C-1,2,3,7,8-PeCDF	87	(40 - 135)
13C-2,3,4,7,8-PeCDF	83	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	81	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	78	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	79	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	87	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-024

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-002 **Work Order #...:** FXQVT1AD **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 41

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**14 Q**	**1.4**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	88	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-025

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-003 Work Order #...: FXQVV1AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 42

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	100	0.71	pg/g	SW846 8290
Total TCDD	150 Q	0.71	pg/g	SW846 8290
1,2,3,7,8-PeCDD	6.0 J	0.43	pg/g	SW846 8290
Total PeCDD	120 Q,S	0.43	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	6.4 J	0.48	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	23 Q	0.53	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	13	0.47	pg/g	SW846 8290
Total HxCDD	230 Q	0.49	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	300 B	0.52	pg/g	SW846 8290
Total HpCDD	630 B	0.52	pg/g	SW846 8290
OCDD	3000 B	0.54	pg/g	SW846 8290
Total TCDF	290 Q	0.73	pg/g	SW846 8290
1,2,3,7,8-PeCDF	9.7	0.29	pg/g	SW846 8290
2,3,4,7,8-PeCDF	16 Q	0.25	pg/g	SW846 8290
Total PeCDF	260 Q,S	0.27	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	170 Q	0.21	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	27	0.23	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	7.8 J	0.26	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	1.1 Q,J	0.27	pg/g	SW846 8290
Total HxCDF	450 Q	0.24	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	550	0.41	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	27	0.39	pg/g	SW846 8290
Total HpCDF	870 Q	0.40	pg/g	SW846 8290
OCDF	1400 B	0.35	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-025

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-003 **Work Order #...:** FXQVV1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	90	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	85	(40 - 135)
13C-OCDD	66	(40 - 135)
13C-2,3,7,8-TCDF	89	(40 - 135)
13C-1,2,3,7,8-PeCDF	90	(40 - 135)
13C-2,3,4,7,8-PeCDF	83	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	91	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	86	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	83	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	89	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	82	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	92	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-025

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-003 **Work Order #...:** FXQVV1AD **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 42

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**24 Q**	**0.88**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	114	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-026

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-004 Work Order #...: FXQV01AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 40

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	6.4	0.61	pg/g	SW846 8290
Total TCDD	17	0.61	pg/g	SW846 8290
1,2,3,7,8-PeCDD	2.8 Q,J	0.33	pg/g	SW846 8290
Total PeCDD	20 Q,J	0.33	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	1.3 J	0.31	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	5.0 Q,J	0.34	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	2.1 J	0.30	pg/g	SW846 8290
Total HxCDD	45 S,Q	0.31	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	58 S,B	0.38	pg/g	SW846 8290
Total HpCDD	120 S,B	0.38	pg/g	SW846 8290
OCDD	600 B	0.40	pg/g	SW846 8290
2,3,7,8-TCDF	4.5 Q	0.46	pg/g	SW846 8290
Total TCDF	46 Q	0.46	pg/g	SW846 8290
1,2,3,7,8-PeCDF	2.2 J	0.21	pg/g	SW846 8290
2,3,4,7,8-PeCDF	2.4 J	0.19	pg/g	SW846 8290
Total PeCDF	50 Q	0.20	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	20	0.17	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	4.5 J	0.18	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	1.3 Q,J	0.21	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.23	pg/g	SW846 8290
Total HxCDF	80 Q	0.19	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	100	0.28	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	5.4 J	0.31	pg/g	SW846 8290
Total HpCDF	160	0.29	pg/g	SW846 8290
OCDF	190 B	0.33	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-026

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-004 **Work Order #...:** FXQV01AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	78	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	81	(40 - 135)
13C-OCDD	65	(40 - 135)
13C-2,3,7,8-TCDF	84	(40 - 135)
13C-1,2,3,7,8-PeCDF	84	(40 - 135)
13C-2,3,4,7,8-PeCDF	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	80	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	78	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	82	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	78	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	81	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-027

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-005 **Work Order #...:** FXQV11AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 31

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.90	pg/g	SW846 8290
Total TCDD	ND	0.90	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.23	pg/g	SW846 8290
Total PeCDD	**0.75 Q,J**	**0.23**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.18	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.63 Q,J**	**0.19**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	**0.34 Q,J**	**0.17**	**pg/g**	**SW846 8290**
Total HxCDD	**5.6 Q,S,J**	**0.18**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**13 B**	**0.25**	**pg/g**	**SW846 8290**
Total HpCDD	**28 B**	**0.25**	**pg/g**	**SW846 8290**
OCDD	**150 B**	**0.19**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.68	pg/g	SW846 8290
Total TCDF	**0.62 J**	**0.68**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.16	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.39 Q,J**	**0.13**	**pg/g**	**SW846 8290**
Total PeCDF	**5.3 J,Q**	**0.15**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.27 Q,J**	**0.093**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.47 Q,J**	**0.096**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	**0.15 J**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDF	ND	0.11	pg/g	SW846 8290
Total HxCDF	**3.8 Q,J**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**1.9 J**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.14	pg/g	SW846 8290
Total HpCDF	**5.1 J**	**0.13**	**pg/g**	**SW846 8290**
OCDF	**3.2 B,J**	**0.15**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-027

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-005 **Work Order #...:** FXQV11AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	37 *	(40 - 135)
13C-1,2,3,7,8-PeCDD	70	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	77	(40 - 135)
13C-OCDD	65	(40 - 135)
13C-2,3,7,8-TCDF	34 *	(40 - 135)
13C-1,2,3,7,8-PeCDF	59	(40 - 135)
13C-2,3,4,7,8-PeCDF	64	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	70	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	70	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	69	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	71	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	73	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	70	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

* Surrogate recovery is outside stated control limits.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-028

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-006 **Work Order #...:** FXQV21AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 35

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.4	pg/g	SW846 8290
Total TCDD	ND	1.4	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.28	pg/g	SW846 8290
Total PeCDD	**1.1 Q,J**	**0.28**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	**0.27 Q,J**	**0.21**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDD	**1.2 J**	**0.23**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	**0.78 J**	**0.20**	**pg/g**	**SW846 8290**
Total HxCDD	**10 S,J,Q**	**0.21**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**26 B**	**0.21**	**pg/g**	**SW846 8290**
Total HpCDD	**51 B**	**0.21**	**pg/g**	**SW846 8290**
OCDD	**290 B**	**0.20**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	1.2	pg/g	SW846 8290
Total TCDF	ND	1.2	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.25	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.56 Q,J**	**0.18**	**pg/g**	**SW846 8290**
Total PeCDF	**0.96 Q,J**	**0.21**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.16 Q,J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.40 J**	**0.11**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.11	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.13	pg/g	SW846 8290
Total HxCDF	**3.5 J,Q**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**2.5 J**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	**0.31 Q,J**	**0.18**	**pg/g**	**SW846 8290**
Total HpCDF	**8.3 J,Q**	**0.16**	**pg/g**	**SW846 8290**
OCDF	**4.3 B,J**	**0.16**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-028

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-006 **Work Order #...:** FXQV21AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	25 *	(40 - 135)
13C-1,2,3,7,8-PeCDD	58	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	68	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	64	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	78	(40 - 135)
13C-OCDD	72	(40 - 135)
13C-2,3,7,8-TCDF	21 *	(40 - 135)
13C-1,2,3,7,8-PeCDF	45	(40 - 135)
13C-2,3,4,7,8-PeCDF	51	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	62	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	62	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	66	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	65	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	70	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	59	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

* Surrogate recovery is outside stated control limits.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-029

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-007 Work Order #...: FXQV31AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 36

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.49	pg/g	SW846 8290
Total TCDD	3.3 Q,J	0.49	pg/g	SW846 8290
1,2,3,7,8-PeCDD	0.71 J	0.20	pg/g	SW846 8290
Total PeCDD	11 Q,J	0.20	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	1.1 J	0.19	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	8.3	0.20	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	3.5 J	0.18	pg/g	SW846 8290
Total HxCDD	56 S	0.19	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	200 B	0.28	pg/g	SW846 8290
Total HpCDD	420 B	0.28	pg/g	SW846 8290
OCDD	2700 B	0.36	pg/g	SW846 8290
2,3,7,8-TCDF	1.5 Q,J	0.40	pg/g	SW846 8290
Total TCDF	12 Q	0.40	pg/g	SW846 8290
1,2,3,7,8-PeCDF	0.31 Q,J	0.15	pg/g	SW846 8290
2,3,4,7,8-PeCDF	0.77 Q,J	0.13	pg/g	SW846 8290
Total PeCDF	17 J,Q	0.14	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	1.9 Q,J	0.092	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	1.1 J	0.098	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	0.67 J	0.11	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.12	pg/g	SW846 8290
Total HxCDF	37 Q	0.10	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	23	0.16	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	2.4 J	0.18	pg/g	SW846 8290
Total HpCDF	97 Q	0.17	pg/g	SW846 8290
OCDF	62 B	0.21	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-029

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-007 **Work Order #...:** FXQV31AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	61	(40 - 135)
13C-1,2,3,7,8-PeCDD	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	80	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	71	(40 - 135)
13C-OCDD	51	(40 - 135)
13C-2,3,7,8-TCDF	59	(40 - 135)
13C-1,2,3,7,8-PeCDF	72	(40 - 135)
13C-2,3,4,7,8-PeCDF	72	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	80	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	77	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	75	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	77	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	70	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	70	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-030

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-008 **Work Order #...:** FXQV41AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 29

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.35	pg/g	SW846 8290
Total TCDD	ND	0.35	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.14	pg/g	SW846 8290
Total PeCDD	**0.53 Q,J**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.15	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.21 Q,J**	**0.16**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.14	pg/g	SW846 8290
Total HxCDD	**2.3 J,Q,S**	**0.15**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**4.4 B,J,S**	**0.16**	**pg/g**	**SW846 8290**
Total HpCDD	**9.9 J,B,S**	**0.16**	**pg/g**	**SW846 8290**
OCDD	**49 B**	**0.17**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.24	pg/g	SW846 8290
Total TCDF	**0.28 J**	**0.24**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.10	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.085	pg/g	SW846 8290
Total PeCDF	**1.0 J,Q**	**0.094**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.22 J**	**0.068**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.097 Q,J**	**0.072**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.082	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.090	pg/g	SW846 8290
Total HxCDF	**1.1 J,Q**	**0.077**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.72 J**	**0.090**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.096	pg/g	SW846 8290
Total HpCDF	**2.1 J**	**0.093**	**pg/g**	**SW846 8290**
OCDF	**1.5 B,J**	**0.14**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-030

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-008 **Work Order #...:** FXQV41AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(40 - 135)
13C-1,2,3,7,8-PeCDD	86	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	82	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	78	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	79	(40 - 135)
13C-OCDD	64	(40 - 135)
13C-2,3,7,8-TCDF	80	(40 - 135)
13C-1,2,3,7,8-PeCDF	80	(40 - 135)
13C-2,3,4,7,8-PeCDF	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	80	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	79	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	77	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	81	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-031

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-009 Work Order #...: FXQV61AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 47

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.53	pg/g	SW846 8290
Total TCDD	0.92 J	0.53	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.21	pg/g	SW846 8290
Total PeCDD	1.3 Q,J	0.21	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.21	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	1.0 J	0.23	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	0.75 Q,J	0.20	pg/g	SW846 8290
Total HxCDD	7.6 S,J,Q	0.21	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	24 B,S	0.35	pg/g	SW846 8290
Total HpCDD	50 Q,B,S	0.35	pg/g	SW846 8290
OCDD	490 B	0.38	pg/g	SW846 8290
2,3,7,8-TCDF	ND	0.37	pg/g	SW846 8290
Total TCDF	2.9 Q,J	0.37	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.15	pg/g	SW846 8290
2,3,4,7,8-PeCDF	0.47 Q,J	0.13	pg/g	SW846 8290
Total PeCDF	5.2 J,Q	0.14	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	1.1 Q,J	0.12	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	0.20 Q,J	0.13	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	0.28 J	0.14	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.15	pg/g	SW846 8290
Total HxCDF	7.1 Q,J	0.13	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	5.3 J	0.18	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	0.49 J	0.18	pg/g	SW846 8290
Total HpCDF	14 J,Q	0.18	pg/g	SW846 8290
OCDF	12 B,J	0.25	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-031

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-009 **Work Order #...:** FXQV61AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	85	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	69	(40 - 135)
13C-OCDD	60	(40 - 135)
13C-2,3,7,8-TCDF	84	(40 - 135)
13C-1,2,3,7,8-PeCDF	82	(40 - 135)
13C-2,3,4,7,8-PeCDF	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	84	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	80	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	74	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	78	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-032

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-010 **Work Order #...:** FXQV71AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 44

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.47	pg/g	SW846 8290
Total TCDD	ND	0.47	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.20	pg/g	SW846 8290
Total PeCDD	ND	0.20	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.19	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.38 Q,J**	**0.20**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.18	pg/g	SW846 8290
Total HxCDD	**1.1 Q,J**	**0.19**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**6.4 B,S,J**	**0.32**	**pg/g**	**SW846 8290**
Total HpCDD	**14 Q,J,B,S**	**0.32**	**pg/g**	**SW846 8290**
OCDD	**120 B**	**0.22**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.34	pg/g	SW846 8290
Total TCDF	ND	0.34	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.13	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.26 Q,J**	**0.11**	**pg/g**	**SW846 8290**
Total PeCDF	**1.4 J,Q**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.27 J**	**0.095**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	ND	0.098	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.10	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.13	pg/g	SW846 8290
Total HxCDF	**1.2 J,Q**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**2.5 J**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.15	pg/g	SW846 8290
Total HpCDF	**4.6 J**	**0.15**	**pg/g**	**SW846 8290**
OCDF	**5.8 B,J**	**0.20**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-032

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-010 **Work Order #...:** FXQV71AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	71	(40 - 135)
13C-1,2,3,7,8-PeCDD	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	76	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	72	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	54	(40 - 135)
13C-OCDD	59	(40 - 135)
13C-2,3,7,8-TCDF	72	(40 - 135)
13C-1,2,3,7,8-PeCDF	71	(40 - 135)
13C-2,3,4,7,8-PeCDF	73	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	74	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	74	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	75	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	74	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	69	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	72	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-033

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-011 **Work Order #...:** FXQV91AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 44

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.52	pg/g	SW846 8290
Total TCDD	ND	0.52	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.21	pg/g	SW846 8290
Total PeCDD	**0.36 Q,J**	**0.21**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.20	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.22	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.20	pg/g	SW846 8290
Total HxCDD	**0.35 Q,S,J**	**0.20**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**3.3 S,B,J**	**0.26**	**pg/g**	**SW846 8290**
Total HpCDD	**7.0 J,S,B**	**0.26**	**pg/g**	**SW846 8290**
OCDD	**59 B**	**0.23**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.33	pg/g	SW846 8290
Total TCDF	ND	0.33	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.15	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.13	pg/g	SW846 8290
Total PeCDF	ND	0.14	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	**0.18 Q,J**	**0.098**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	ND	0.097	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.10	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.12	pg/g	SW846 8290
Total HxCDF	**0.99 J,S,Q**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.85 J**	**0.13**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.14	pg/g	SW846 8290
Total HpCDF	**2.0 Q,J**	**0.13**	**pg/g**	**SW846 8290**
OCDF	**1.6 B,J**	**0.23**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-033

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-011 **Work Order #...:** FXQV91AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	(40 - 135)
13C-1,2,3,7,8-PeCDD	86	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	81	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	79	(40 - 135)
13C-OCDD	66	(40 - 135)
13C-2,3,7,8-TCDF	82	(40 - 135)
13C-1,2,3,7,8-PeCDF	81	(40 - 135)
13C-2,3,4,7,8-PeCDF	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	82	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	78	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	79	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	78	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-034

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-012 **Work Order #...:** FXQWA1AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 39

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.42	pg/g	SW846 8290
Total TCDD	ND	0.42	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.18	pg/g	SW846 8290
Total PeCDD	ND	0.18	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.14	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.15	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.13	pg/g	SW846 8290
Total HxCDD	**0.23 Q,J**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**2.0 Q,B,J,S**	**0.16**	**pg/g**	**SW846 8290**
Total HpCDD	**4.0 Q,B,J,S**	**0.16**	**pg/g**	**SW846 8290**
OCDD	**28 B**	**0.14**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.28	pg/g	SW846 8290
Total TCDF	ND	0.28	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.12	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.094	pg/g	SW846 8290
Total PeCDF	**0.10 Q,J**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.080 Q,J**	**0.066**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	ND	0.067	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.073	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.084	pg/g	SW846 8290
Total HxCDF	**0.24 J,Q**	**0.072**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.48 Q,J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.12	pg/g	SW846 8290
Total HpCDF	**1.3 J,Q**	**0.11**	**pg/g**	**SW846 8290**
OCDF	**1.3 Q,B,J**	**0.15**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-034

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-012 **Work Order #...:** FXQWA1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	86	(40 - 135)
13C-OCDD	72	(40 - 135)
13C-2,3,7,8-TCDF	84	(40 - 135)
13C-1,2,3,7,8-PeCDF	83	(40 - 135)
13C-2,3,4,7,8-PeCDF	85	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	84	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	80	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	82	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	82	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-035

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-013 Work Order #...: FXQWC1AA Matrix.....: SOLID
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 36

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.44	pg/g	SW846 8290
Total TCDD	ND	0.44	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.23	pg/g	SW846 8290
Total PeCDD	**0.78 Q,J**	**0.23**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.18	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.30 Q,J**	**0.20**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	**0.30 Q,J**	**0.17**	**pg/g**	**SW846 8290**
Total HxCDD	**3.3 Q,S,J**	**0.18**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**9.4 S,B**	**0.27**	**pg/g**	**SW846 8290**
Total HpCDD	**21 S,B**	**0.27**	**pg/g**	**SW846 8290**
OCDD	**130 B**	**0.24**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.29	pg/g	SW846 8290
Total TCDF	**0.41 Q,J**	**0.29**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.15	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.23 Q,J**	**0.12**	**pg/g**	**SW846 8290**
Total PeCDF	**1.5 Q,J**	**0.13**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.22 Q,J**	**0.099**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.23 Q,J**	**0.11**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.12	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.13	pg/g	SW846 8290
Total HxCDF	**2.1 J,S,Q**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**1.3 Q,J**	**0.13**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.17	pg/g	SW846 8290
Total HpCDF	**4.2 J,Q**	**0.15**	**pg/g**	**SW846 8290**
OCDF	**2.7 B,J**	**0.17**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-035

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-013 **Work Order #...:** FXQWC1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(40 - 135)
13C-1,2,3,7,8-PeCDD	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	71	(40 - 135)
13C-OCDD	60	(40 - 135)
13C-2,3,7,8-TCDF	79	(40 - 135)
13C-1,2,3,7,8-PeCDF	77	(40 - 135)
13C-2,3,4,7,8-PeCDF	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	76	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	76	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	75	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	78	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	71	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	72	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-036

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-014 **Work Order #...:** FXQWD1AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 39

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.43	pg/g	SW846 8290
Total TCDD	ND	0.43	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.23	pg/g	SW846 8290
Total PeCDD	ND	0.23	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.20	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.39 Q,J**	**0.22**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.20	pg/g	SW846 8290
Total HxCDD	**1.7 Q,J**	**0.21**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**7.7 B,S,J**	**0.41**	**pg/g**	**SW846 8290**
Total HpCDD	**18 B,S**	**0.41**	**pg/g**	**SW846 8290**
OCDD	**150 B**	**0.42**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.31	pg/g	SW846 8290
Total TCDF	**0.87 Q,J**	**0.31**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.15	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.20 Q,J**	**0.13**	**pg/g**	**SW846 8290**
Total PeCDF	**2.3 J,Q**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.24 Q,J**	**0.099**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.49 Q,J**	**0.10**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.12	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.16	pg/g	SW846 8290
Total HxCDF	**2.7 J,S,Q**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**1.7 J**	**0.20**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.29	pg/g	SW846 8290
Total HpCDF	**3.9 Q,J**	**0.24**	**pg/g**	**SW846 8290**
OCDF	**4.3 B,J**	**0.34**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-036

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-014 **Work Order #...:** FXQWD1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	97	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	93	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	61	(40 - 135)
13C-OCDD	49	(40 - 135)
13C-2,3,7,8-TCDF	81	(40 - 135)
13C-1,2,3,7,8-PeCDF	75	(40 - 135)
13C-2,3,4,7,8-PeCDF	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	96	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	94	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	87	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	78	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	75	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-037

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-015 **Work Order #...:** FXQWE1AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 40

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.45	pg/g	SW846 8290
Total TCDD	ND	0.45	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.19	pg/g	SW846 8290
Total PeCDD	ND	0.19	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.16	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.18	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.16	pg/g	SW846 8290
Total HxCDD	ND	0.17	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	**2.2 S,B,J**	**0.21**	**pg/g**	**SW846 8290**
Total HpCDD	**3.9 Q,J,B,S**	**0.21**	**pg/g**	**SW846 8290**
OCDD	**31 B**	**0.24**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.30	pg/g	SW846 8290
Total TCDF	**0.46 J**	**0.30**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.13	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.36 Q,J**	**0.12**	**pg/g**	**SW846 8290**
Total PeCDF	**0.69 Q,J**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	ND	0.087	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	ND	0.092	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.096	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.11	pg/g	SW846 8290
Total HxCDF	**0.34 J,Q**	**0.096**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.42 J**	**0.15**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.16	pg/g	SW846 8290
Total HpCDF	**1.1 Q,J**	**0.16**	**pg/g**	**SW846 8290**
OCDF	**0.92 B,J**	**0.18**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-037

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-015 **Work Order #...:** FXQWE1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(40 - 135)
13C-1,2,3,7,8-PeCDD	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	78	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	76	(40 - 135)
13C-OCDD	60	(40 - 135)
13C-2,3,7,8-TCDF	79	(40 - 135)
13C-1,2,3,7,8-PeCDF	79	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	78	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	76	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	75	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	77	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	72	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	75	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-038

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-016 **Work Order #...:** FXQWF1AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 27

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.32	pg/g	SW846 8290
Total TCDD	ND	0.32	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.19	pg/g	SW846 8290
Total PeCDD	**2.3 Q,J**	**0.19**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.16	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.80 J**	**0.17**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.16	pg/g	SW846 8290
Total HxCDD	**7.7 S,J**	**0.16**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**11 B**	**0.22**	**pg/g**	**SW846 8290**
Total HpCDD	**24 Q,B**	**0.22**	**pg/g**	**SW846 8290**
OCDD	**99 B**	**0.28**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	**0.41 Q,J**	**0.26**	**pg/g**	**SW846 8290**
Total TCDF	**20 Q**	**0.26**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.14	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.57 J**	**0.12**	**pg/g**	**SW846 8290**
Total PeCDF	**56 Q**	**0.13**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.13 Q,J**	**0.091**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.44 Q,J**	**0.097**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	**0.63 J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDF	ND	0.12	pg/g	SW846 8290
Total HxCDF	**22 J,Q**	**0.10**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**1.4 J**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.15	pg/g	SW846 8290
Total HpCDF	**4.0 J**	**0.14**	**pg/g**	**SW846 8290**
OCDF	**1.5 Q,B,J**	**0.21**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-038

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-016 **Work Order #...:** FXQWF1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	(40 - 135)
13C-1,2,3,7,8-PeCDD	86	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	86	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	77	(40 - 135)
13C-OCDD	59	(40 - 135)
13C-2,3,7,8-TCDF	85	(40 - 135)
13C-1,2,3,7,8-PeCDF	81	(40 - 135)
13C-2,3,4,7,8-PeCDF	79	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	85	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	83	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	81	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	84	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	78	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	78	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-039

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-017 **Work Order #...:** FXQWG1AA **Matrix.....:** SOLID
Date Sampled...: 08/26/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 33

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.36	pg/g	SW846 8290
Total TCDD	ND	0.36	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.19	pg/g	SW846 8290
Total PeCDD	ND	0.19	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.17	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.18	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.16	pg/g	SW846 8290
Total HxCDD	ND	0.17	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	**1.2 Q,B,J,S**	**0.17**	**pg/g**	**SW846 8290**
Total HpCDD	**2.8 Q,B,J,S**	**0.17**	**pg/g**	**SW846 8290**
OCDD	**21 B**	**0.24**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.25	pg/g	SW846 8290
Total TCDF	ND	0.25	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.12	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.16 Q,J**	**0.10**	**pg/g**	**SW846 8290**
Total PeCDF	**0.33 Q,J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	ND	0.084	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	ND	0.089	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.092	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.10	pg/g	SW846 8290
Total HxCDF	**0.16 J**	**0.091**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.28 Q,J**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.13	pg/g	SW846 8290
Total HpCDF	**0.62 Q,J**	**0.12**	**pg/g**	**SW846 8290**
OCDF	**0.75 B,J**	**0.18**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030916-039

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-017 **Work Order #...:** FXQWG1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(40 - 135)
13C-1,2,3,7,8-PeCDD	87	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	76	(40 - 135)
13C-OCDD	60	(40 - 135)
13C-2,3,7,8-TCDF	81	(40 - 135)
13C-1,2,3,7,8-PeCDF	82	(40 - 135)
13C-2,3,4,7,8-PeCDF	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	85	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	80	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	81	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	78	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	78	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-001

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-018 **Work Order #...:** FXQWJ1AA **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/08/03 **Analysis Date..:** 09/17/03
Prep Batch #...: 3251409
Dilution Factor: 1
% Moisture.....: 36

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.50	pg/g	SW846 8290
Total TCDD	**1.7**	**0.50**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDD	ND	0.25	pg/g	SW846 8290
Total PeCDD	**1.4 Q,J**	**0.25**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.27	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.63 Q,J**	**0.27**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.25	pg/g	SW846 8290
Total HxCDD	**4.6 Q,S,J**	**0.26**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**16 B**	**0.35**	**pg/g**	**SW846 8290**
Total HpCDD	**36 B**	**0.35**	**pg/g**	**SW846 8290**
OCDD	**140 B**	**0.32**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	**1.5 Q,J**	**0.42**	**pg/g**	**SW846 8290**
Total TCDF	**23 Q**	**0.42**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.18	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.53 Q,J**	**0.16**	**pg/g**	**SW846 8290**
Total PeCDF	**4.9 Q,J**	**0.17**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**1.0 J**	**0.14**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.30 Q,J**	**0.14**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.15	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.18	pg/g	SW846 8290
Total HxCDF	**8.3 J,S,Q**	**0.15**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**8.8**	**0.23**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	**0.48 J**	**0.26**	**pg/g**	**SW846 8290**
Total HpCDF	**20**	**0.24**	**pg/g**	**SW846 8290**
OCDF	**14 B,J**	**0.29**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-001

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-018 **Work Order #...:** FXQWJ1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	83	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	78	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	73	(40 - 135)
13C-OCDD	59	(40 - 135)
13C-2,3,7,8-TCDF	85	(40 - 135)
13C-1,2,3,7,8-PeCDF	82	(40 - 135)
13C-2,3,4,7,8-PeCDF	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	82	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	81	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	79	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	73	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	76	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-002

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-019 Work Order #...: FXQWK1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/18/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 56

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.87	pg/g	SW846 8290
Total TCDD	**2.9**	**0.87**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDD	ND	0.68	pg/g	SW846 8290
Total PeCDD	**2.9 Q,J**	**0.68**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.84	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**1.7 Q,J**	**0.93**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.85	pg/g	SW846 8290
Total HxCDD	**15 J,Q**	**0.87**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**46**	**1.2**	**pg/g**	**SW846 8290**
Total HpCDD	**100**	**1.2**	**pg/g**	**SW846 8290**
OCDD	**500 B**	**1.0**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	**2.7 Q**	**1.0**	**pg/g**	**SW846 8290**
Total TCDF	**51 Q**	**1.0**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	**0.65 Q,J**	**0.58**	**pg/g**	**SW846 8290**
2,3,4,7,8-PeCDF	**1.0 Q,B,J**	**0.54**	**pg/g**	**SW846 8290**
Total PeCDF	**16 J,Q,B**	**0.56**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**4.0 Q,B,J**	**0.52**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**1.2 B,J**	**0.55**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	**1.7 Q,J**	**0.71**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDF	ND	0.78	pg/g	SW846 8290
Total HxCDF	**30 J,Q,B**	**0.62**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**24 Q,B**	**0.87**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/g	SW846 8290
Total HpCDF	**63 Q**	**1.0**	**pg/g**	**SW846 8290**
OCDF	**13 B,J**	**1.0**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-002

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-019 **Work Order #...:** FXQWK1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	65	(40 - 135)
13C-1,2,3,7,8-PeCDD	70	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	68	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	62	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	65	(40 - 135)
13C-OCDD	52	(40 - 135)
13C-2,3,7,8-TCDF	61	(40 - 135)
13C-1,2,3,7,8-PeCDF	63	(40 - 135)
13C-2,3,4,7,8-PeCDF	58	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	65	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	56	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	63	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	53	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	45	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-003

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-020 **Work Order #...:** FXQWL1AA **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 70

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.75	pg/g	SW846 8290
Total TCDD	**2.7 Q,J**	**0.75**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDD	ND	0.51	pg/g	SW846 8290
Total PeCDD	**3.2 Q,J**	**0.51**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.62	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**1.6 J**	**0.75**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.66	pg/g	SW846 8290
Total HxCDD	**12 J**	**0.67**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**23**	**0.66**	**pg/g**	**SW846 8290**
Total HpCDD	**48**	**0.66**	**pg/g**	**SW846 8290**
OCDD	**220 B**	**0.77**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	**3.1 Q,J**	**0.86**	**pg/g**	**SW846 8290**
Total TCDF	**35 Q**	**0.86**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.47	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.40	pg/g	SW846 8290
Total PeCDF	**7.4 J,Q**	**0.44**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**2.9 B,Q,J**	**0.40**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.89 B,J**	**0.40**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.44	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.51	pg/g	SW846 8290
Total HxCDF	**16 Q,J,B**	**0.43**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**17 Q,B**	**0.52**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.64	pg/g	SW846 8290
Total HpCDF	**40 Q,B**	**0.57**	**pg/g**	**SW846 8290**
OCDF	**11 B,J**	**0.62**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-003

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-020 **Work Order #...:** FXQWL1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	69	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	82	(40 - 135)
13C-OCDD	75	(40 - 135)
13C-2,3,7,8-TCDF	76	(40 - 135)
13C-1,2,3,7,8-PeCDF	75	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	68	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	69	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	64	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	67	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-004

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-021 Work Order #...: FXQWN1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 62

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.55	pg/g	SW846 8290
Total TCDD	8.4 Q	0.55	pg/g	SW846 8290
1,2,3,7,8-PeCDD	0.71 B,J	0.42	pg/g	SW846 8290
Total PeCDD	11 Q,J,B	0.42	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	0.70 Q,J	0.55	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	5.7 J	0.59	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	1.8 J	0.55	pg/g	SW846 8290
Total HxCDD	52 Q	0.56	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	110	0.67	pg/g	SW846 8290
Total HpCDD	220	0.67	pg/g	SW846 8290
OCDD	1100 B	0.86	pg/g	SW846 8290
2,3,7,8-TCDF	3.6 Q	0.65	pg/g	SW846 8290
Total TCDF	62 Q	0.65	pg/g	SW846 8290
1,2,3,7,8-PeCDF	1.4 J	0.37	pg/g	SW846 8290
2,3,4,7,8-PeCDF	1.8 B,J	0.33	pg/g	SW846 8290
Total PeCDF	38 J,Q,B	0.35	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	12 B,Q,J	0.41	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	4.4 Q,B,J	0.41	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	2.0 Q,J	0.42	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.54	pg/g	SW846 8290
Total HxCDF	85 Q,S,B	0.44	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	82 B	0.55	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	3.1 J	0.80	pg/g	SW846 8290
Total HpCDF	200 Q,B	0.66	pg/g	SW846 8290
OCDF	27 B	0.53	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-004

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-021 **Work Order #...:** FXQWN1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	75	(40 - 135)
13C-1,2,3,7,8-PeCDD	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	75	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	68	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	75	(40 - 135)
13C-OCDD	62	(40 - 135)
13C-2,3,7,8-TCDF	73	(40 - 135)
13C-1,2,3,7,8-PeCDF	71	(40 - 135)
13C-2,3,4,7,8-PeCDF	73	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	69	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	66	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	67	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	53	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	50	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-005

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-022 Work Order #...: FXQWP1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 61

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.65	pg/g	SW846 8290
Total TCDD	2.1 J	0.65	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.48	pg/g	SW846 8290
Total PeCDD	4.2 Q,J	0.48	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	0.49 Q,J	0.60	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	1.9 Q,J	0.66	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	0.80 Q,J	0.61	pg/g	SW846 8290
Total HxCDD	18 Q,J	0.62	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	43	0.86	pg/g	SW846 8290
Total HpCDD	82	0.86	pg/g	SW846 8290
OCDD	390 B	1.2	pg/g	SW846 8290
Total TCDF	33 Q	0.74	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.46	pg/g	SW846 8290
2,3,4,7,8-PeCDF	0.78 Q,B,J	0.38	pg/g	SW846 8290
Total PeCDF	12 J,Q,B	0.42	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	3.7 B,Q,J	0.43	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	1.2 Q,B,J	0.44	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.47	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.55	pg/g	SW846 8290
Total HxCDF	31 S,Q,B	0.47	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	32 B	0.63	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	1.4 Q,J	0.92	pg/g	SW846 8290
Total HpCDF	80 B,Q	0.75	pg/g	SW846 8290
OCDF	18 B,J	0.90	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-005

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-022 **Work Order #...:** FXQWP1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	72	(40 - 135)
13C-1,2,3,7,8-PeCDD	77	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	71	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	65	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	68	(40 - 135)
13C-OCDD	51	(40 - 135)
13C-2,3,7,8-TCDF	71	(40 - 135)
13C-1,2,3,7,8-PeCDF	67	(40 - 135)
13C-2,3,4,7,8-PeCDF	69	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	64	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	63	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	65	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	52	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	51	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-005

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-022 **Work Order #...:** FXQWP1AD **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 61

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**2.8 Q**	**0.85**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	68	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-006

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-023 Work Order #...: FXQWQ1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 44

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.36	pg/g	SW846 8290
Total TCDD	1.3 J	0.36	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.24	pg/g	SW846 8290
Total PeCDD	2.0 Q,J	0.24	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	0.35 Q,J	0.28	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	1.5 J	0.30	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	0.60 Q,J	0.28	pg/g	SW846 8290
Total HxCDD	13 J,Q	0.29	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	25	0.32	pg/g	SW846 8290
Total HpCDD	50	0.32	pg/g	SW846 8290
OCDD	220 B	0.26	pg/g	SW846 8290
2,3,7,8-TCDF	1.6 Q,J	0.40	pg/g	SW846 8290
Total TCDF	24 Q	0.40	pg/g	SW846 8290
1,2,3,7,8-PeCDF	0.38 Q,J	0.20	pg/g	SW846 8290
2,3,4,7,8-PeCDF	0.44 Q,B,J	0.18	pg/g	SW846 8290
Total PeCDF	9.8 J,Q,B	0.19	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	2.9 Q,B,J	0.17	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	0.74 Q,B,J	0.19	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	0.63 Q,J	0.19	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.24	pg/g	SW846 8290
Total HxCDF	19 J,Q,S,B	0.20	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	19 B	0.27	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	1.1 J	0.39	pg/g	SW846 8290
Total HpCDF	44 Q,B	0.32	pg/g	SW846 8290
OCDF	11 B,J	0.33	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-006

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-023 **Work Order #...:** FXQWQ1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(40 - 135)
13C-1,2,3,7,8-PeCDD	89	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	77	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	69	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
13C-OCDD	73	(40 - 135)
13C-2,3,7,8-TCDF	75	(40 - 135)
13C-1,2,3,7,8-PeCDF	78	(40 - 135)
13C-2,3,4,7,8-PeCDF	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	69	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	70	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	62	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	66	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-007

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-024 Work Order #...: FXQWR1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 62

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.63	pg/g	SW846 8290
Total TCDD	ND	0.63	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.40	pg/g	SW846 8290
Total PeCDD	**1.0 Q,J**	**0.40**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.42	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.90 J**	**0.46**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.42	pg/g	SW846 8290
Total HxCDD	**7.7 J,Q**	**0.43**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**11 J**	**0.45**	**pg/g**	**SW846 8290**
Total HpCDD	**23 J**	**0.45**	**pg/g**	**SW846 8290**
OCDD	**110 B**	**0.52**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	**1.5 Q,J**	**0.66**	**pg/g**	**SW846 8290**
Total TCDF	**8.0 Q**	**0.66**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.36	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.30	pg/g	SW846 8290
Total PeCDF	**0.89 Q,J**	**0.33**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**1.1 Q,B,J**	**0.31**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.59 Q,B,J**	**0.32**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.35	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.38	pg/g	SW846 8290
Total HxCDF	**9.7 Q,J,B**	**0.34**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**8.5 Q,B,J**	**0.45**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	**1.2 J**	**0.49**	**pg/g**	**SW846 8290**
Total HpCDF	**23 Q,B**	**0.47**	**pg/g**	**SW846 8290**
OCDF	**8.2 B,J**	**0.48**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-007

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-024 **Work Order #...:** FXQWR1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	66	(40 - 135)
13C-1,2,3,7,8-PeCDD	76	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	68	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	60	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	75	(40 - 135)
13C-OCDD	72	(40 - 135)
13C-2,3,7,8-TCDF	63	(40 - 135)
13C-1,2,3,7,8-PeCDF	67	(40 - 135)
13C-2,3,4,7,8-PeCDF	70	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	63	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	60	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	60	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	67	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	62	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	71	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-008

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-025 Work Order #...: FXQWT1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 52

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	0.60 Q,J	0.41	pg/g	SW846 8290
Total TCDD	10 Q	0.41	pg/g	SW846 8290
1,2,3,7,8-PeCDD	0.94 Q,B,J	0.33	pg/g	SW846 8290
Total PeCDD	17 Q,J,B	0.33	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	1.9 J	0.38	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	14	0.41	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	4.6 Q,J	0.38	pg/g	SW846 8290
Total HxCDD	100 Q	0.39	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	250	0.57	pg/g	SW846 8290
Total HpCDD	520	0.57	pg/g	SW846 8290
OCDD	2500 B	0.67	pg/g	SW846 8290
Total TCDF	69 Q	0.48	pg/g	SW846 8290
1,2,3,7,8-PeCDF	1.9 Q,J	0.30	pg/g	SW846 8290
2,3,4,7,8-PeCDF	2.5 B,J	0.26	pg/g	SW846 8290
Total PeCDF	68 Q,B	0.28	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	23 B,Q	0.24	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	9.8 B,J	0.24	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	3.6 Q,J	0.27	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.31	pg/g	SW846 8290
Total HxCDF	200 Q,S,B	0.26	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	230 B	0.37	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	9.0 J	0.36	pg/g	SW846 8290
Total HpCDF	550 Q,B	0.36	pg/g	SW846 8290
OCDF	200 B	0.50	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-008

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-025 **Work Order #...:** FXQWT1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	75	(40 - 135)
13C-1,2,3,7,8-PeCDD	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	66	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	76	(40 - 135)
13C-OCDD	68	(40 - 135)
13C-2,3,7,8-TCDF	74	(40 - 135)
13C-1,2,3,7,8-PeCDF	71	(40 - 135)
13C-2,3,4,7,8-PeCDF	73	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	72	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	66	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	63	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	72	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-008

Trace Level Organic Compounds

Lot-Sample #...:	H3I060138-025	**Work Order #...:**	FXQWT1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/27/03	**Date Received..:**	09/06/03		
Prep Date.....:	09/09/03	**Analysis Date..:**	09/23/03		
Prep Batch #...:	3252134				
Dilution Factor:	1				
% Moisture.....:	52				

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**5.0 Q**	**0.74**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	75	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-009

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-026 Work Order #...: FXQWV1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 55

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.42	pg/g	SW846 8290
Total TCDD	5.6 Q	0.42	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.29	pg/g	SW846 8290
Total PeCDD	6.3 Q,J	0.29	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	0.66 Q,J	0.32	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	3.8 J	0.34	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	1.7 J	0.31	pg/g	SW846 8290
Total HxCDD	36 Q	0.32	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	76	0.50	pg/g	SW846 8290
Total HpCDD	160	0.50	pg/g	SW846 8290
OCDD	760 B	0.47	pg/g	SW846 8290
Total TCDF	66 Q	0.50	pg/g	SW846 8290
1,2,3,7,8-PeCDF	0.89 Q,J	0.27	pg/g	SW846 8290
2,3,4,7,8-PeCDF	1.1 Q,B,J	0.22	pg/g	SW846 8290
Total PeCDF	24 J,Q,B	0.25	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	6.3 Q,B,J	0.23	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	2.5 B,J	0.23	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	1.2 J	0.24	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.30	pg/g	SW846 8290
Total HxCDF	51 Q,S,B	0.25	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	59 B	0.35	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	2.2 J	0.46	pg/g	SW846 8290
Total HpCDF	140 Q,B	0.40	pg/g	SW846 8290
OCDF	43 B	0.33	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-009

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-026 **Work Order #...:** FXQWV1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(40 - 135)
13C-1,2,3,7,8-PeCDD	88	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	76	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	79	(40 - 135)
13C-OCDD	74	(40 - 135)
13C-2,3,7,8-TCDF	74	(40 - 135)
13C-1,2,3,7,8-PeCDF	76	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	68	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	71	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	75	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	64	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	71	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-009

Trace Level Organic Compounds

Lot-Sample #...:	H3I060138-026	**Work Order #...:**	FXQWV1AD	**Matrix.....:**	SOLID
Date Sampled...:	08/27/03	**Date Received..:**	09/06/03		
Prep Date.....:	09/09/03	**Analysis Date..:**	09/23/03		
Prep Batch #...:	3252134				
Dilution Factor:	1				
% Moisture.....:	55				

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**3.0**	**0.70**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	74	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-010

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-027 Work Order #...: FXQWW1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 51

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	0.72 Q,J	0.41	pg/g	SW846 8290
Total TCDD	11 Q	0.41	pg/g	SW846 8290
1,2,3,7,8-PeCDD	0.46 B,J	0.32	pg/g	SW846 8290
Total PeCDD	11 Q,J,B	0.32	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	1.3 Q,J	0.34	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	9.8 J	0.37	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	3.3 J	0.34	pg/g	SW846 8290
Total HxCDD	69 Q	0.35	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	190	0.64	pg/g	SW846 8290
Total HpCDD	400	0.64	pg/g	SW846 8290
OCDD	1800 B	0.68	pg/g	SW846 8290
2,3,7,8-TCDF	5.2	0.47	pg/g	SW846 8290
Total TCDF	79 Q	0.47	pg/g	SW846 8290
1,2,3,7,8-PeCDF	1.1 Q,J	0.30	pg/g	SW846 8290
2,3,4,7,8-PeCDF	1.4 Q,B,J	0.24	pg/g	SW846 8290
Total PeCDF	47 Q,B	0.27	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	13 Q,B	0.28	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	4.6 B,J	0.29	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	1.8 Q,J	0.28	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.38	pg/g	SW846 8290
Total HxCDF	130 Q,S,B	0.30	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	130 B	0.38	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	6.0 J	0.89	pg/g	SW846 8290
Total HpCDF	340 Q,B	0.54	pg/g	SW846 8290
OCDF	23 B	0.45	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-010

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-027 **Work Order #...:** FXQWW1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	(40 - 135)
13C-1,2,3,7,8-PeCDD	92	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	71	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
13C-OCDD	68	(40 - 135)
13C-2,3,7,8-TCDF	82	(40 - 135)
13C-1,2,3,7,8-PeCDF	80	(40 - 135)
13C-2,3,4,7,8-PeCDF	85	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	68	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	74	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	71	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	56	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	45	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-011

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-028 Work Order #...: FXQWX1AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/22/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 43

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.55	pg/g	SW846 8290
Total TCDD	1.4 J	0.55	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.36	pg/g	SW846 8290
Total PeCDD	2.3 Q,J	0.36	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.51	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	1.9 J	0.56	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.51	pg/g	SW846 8290
Total HxCDD	14 J	0.53	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	42	0.75	pg/g	SW846 8290
Total HpCDD	86	0.75	pg/g	SW846 8290
OCDD	440 B	0.97	pg/g	SW846 8290
Total TCDF	43 Q	0.63	pg/g	SW846 8290
1,2,3,7,8-PeCDF	0.33 Q,J	0.32	pg/g	SW846 8290
2,3,4,7,8-PeCDF	0.65 Q,B,J	0.29	pg/g	SW846 8290
Total PeCDF	13 J,Q,B	0.31	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	3.7 B,Q,J	0.31	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	1.0 B,J	0.31	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	0.64 Q,J	0.34	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.42	pg/g	SW846 8290
Total HxCDF	26 Q,B	0.34	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	24 B	0.49	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	1.2 J	0.66	pg/g	SW846 8290
Total HpCDF	62 Q,B	0.57	pg/g	SW846 8290
OCDF	33 B	0.65	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-011

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-028 **Work Order #...:** FXQWX1AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(40 - 135)
13C-1,2,3,7,8-PeCDD	84	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	77	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	72	(40 - 135)
13C-OCDD	56	(40 - 135)
13C-2,3,7,8-TCDF	75	(40 - 135)
13C-1,2,3,7,8-PeCDF	74	(40 - 135)
13C-2,3,4,7,8-PeCDF	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	71	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	73	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	76	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	60	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	65	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-011

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-028 **Work Order #...:** FXQWX1AD **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 43

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**1.8 Q**	**0.69**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	76	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-012

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-029 Work Order #...: FXQW11AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 66

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.73	pg/g	SW846 8290
Total TCDD	11 Q	0.73	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.54	pg/g	SW846 8290
Total PeCDD	18 Q,J	0.54	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	1.2 Q,J	0.55	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	7.5 J	0.59	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	3.0 Q,J	0.55	pg/g	SW846 8290
Total HxCDD	63 Q	0.56	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	140	1.2	pg/g	SW846 8290
Total HpCDD	280	1.2	pg/g	SW846 8290
OCDD	1400 B	0.77	pg/g	SW846 8290
Total TCDF	120 Q	0.95	pg/g	SW846 8290
1,2,3,7,8-PeCDF	2.1 Q,J	0.52	pg/g	SW846 8290
2,3,4,7,8-PeCDF	2.2 B,J	0.40	pg/g	SW846 8290
Total PeCDF	45 J,Q,B	0.46	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	15 Q,B	0.46	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	3.7 Q,B,J	0.45	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	2.1 Q,J	0.45	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.60	pg/g	SW846 8290
Total HxCDF	89 Q,S,B	0.48	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	91 B	0.66	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	4.4 J	1.3	pg/g	SW846 8290
Total HpCDF	220 Q,B	0.88	pg/g	SW846 8290
OCDF	23 B,J	0.67	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-012

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-029 **Work Order #...:** FXQW11AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	(40 - 135)
13C-1,2,3,7,8-PeCDD	99	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	89	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	77	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	87	(40 - 135)
13C-OCDD	79	(40 - 135)
13C-2,3,7,8-TCDF	84	(40 - 135)
13C-1,2,3,7,8-PeCDF	84	(40 - 135)
13C-2,3,4,7,8-PeCDF	89	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	76	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	73	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	79	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	63	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	56	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

S Ion suppression.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-012

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-029 **Work Order #...:** FXQW11AD **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 66

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**6.9 Q**	**0.80**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	84	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-013

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-030 **Work Order #...:** FXQW21AA **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 57

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.56	pg/g	SW846 8290
Total TCDD	**1.1 Q,J**	**0.56**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDD	ND	0.35	pg/g	SW846 8290
Total PeCDD	**0.77 Q,J**	**0.35**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.37	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.43	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.38	pg/g	SW846 8290
Total HxCDD	**3.7 Q,J**	**0.39**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**7.7 J**	**0.46**	**pg/g**	**SW846 8290**
Total HpCDD	**15 J**	**0.46**	**pg/g**	**SW846 8290**
OCDD	**74 B**	**0.42**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.54	pg/g	SW846 8290
Total TCDF	**2.0 J**	**0.54**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.32	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.25	pg/g	SW846 8290
Total PeCDF	**2.1 Q,J**	**0.28**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.80 B,J**	**0.27**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	ND	0.29	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.28	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.34	pg/g	SW846 8290
Total HxCDF	**4.1 Q,J,B**	**0.29**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**4.3 Q,B,J**	**0.38**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.45	pg/g	SW846 8290
Total HpCDF	**9.9 J,Q,B**	**0.41**	**pg/g**	**SW846 8290**
OCDF	**4.7 B,J**	**0.42**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-013

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-030 **Work Order #...:** FXQW21AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(40 - 135)
13C-1,2,3,7,8-PeCDD	90	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	85	(40 - 135)
13C-OCDD	79	(40 - 135)
13C-2,3,7,8-TCDF	73	(40 - 135)
13C-1,2,3,7,8-PeCDF	75	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	71	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	70	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	70	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	77	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	67	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	82	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-014

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-031 **Work Order #...:** FXQW41AA **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 25

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.54	pg/g	SW846 8290
Total TCDD	**1.1 Q,J**	**0.54**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDD	ND	0.34	pg/g	SW846 8290
Total PeCDD	**1.2 Q,J**	**0.34**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.37	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	**0.88 J**	**0.42**	**pg/g**	**SW846 8290**
1,2,3,7,8,9-HxCDD	ND	0.38	pg/g	SW846 8290
Total HxCDD	**7.5 J**	**0.39**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDD	**17**	**0.51**	**pg/g**	**SW846 8290**
Total HpCDD	**37**	**0.51**	**pg/g**	**SW846 8290**
OCDD	**180 B**	**0.54**	**pg/g**	**SW846 8290**
Total TCDF	**18 Q**	**0.58**	**pg/g**	**SW846 8290**
1,2,3,7,8-PeCDF	ND	0.35	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.29	pg/g	SW846 8290
Total PeCDF	**5.5 Q,J**	**0.31**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**2.0 Q,B,J**	**0.30**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.62 Q,B,J**	**0.31**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.34	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.38	pg/g	SW846 8290
Total HxCDF	**12 J,Q,B**	**0.33**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**12 B**	**0.41**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.42	pg/g	SW846 8290
Total HpCDF	**29 Q,B**	**0.41**	**pg/g**	**SW846 8290**
OCDF	**14 B**	**0.42**	**pg/g**	**SW846 8290**

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-014

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-031 **Work Order #...:** FXQW41AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	84	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	65	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	75	(40 - 135)
13C-OCDD	67	(40 - 135)
13C-2,3,7,8-TCDF	70	(40 - 135)
13C-1,2,3,7,8-PeCDF	71	(40 - 135)
13C-2,3,4,7,8-PeCDF	75	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	63	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	63	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	62	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	73	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-014

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-031 **Work Order #...:** FXQW41AD **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 25

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**1.3 J**	**0.44**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	70	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than the reporting limit.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-015

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-032 Work Order #...: FXQW51AA Matrix.....: SOLID
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 58

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.7	pg/g	SW846 8290
Total TCDD	12 Q	1.7	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	1.4	pg/g	SW846 8290
Total PeCDD	21 Q	1.4	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	3.1 J	1.8	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	20	2.0	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	8.1 J	1.8	pg/g	SW846 8290
Total HxCDD	140 Q	1.9	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	320	2.9	pg/g	SW846 8290
Total HpCDD	640	2.9	pg/g	SW846 8290
OCDD	2800 B	5.4	pg/g	SW846 8290
Total TCDF	110 Q	1.8	pg/g	SW846 8290
1,2,3,7,8-PeCDF	2.8 J	1.2	pg/g	SW846 8290
2,3,4,7,8-PeCDF	4.1 B,J	1.1	pg/g	SW846 8290
Total PeCDF	150 Q,B	1.2	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	11 B,J	1.4	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	15 B	1.5	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	5.8 Q,J	1.8	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	2.0	pg/g	SW846 8290
Total HxCDF	360 Q,B	1.6	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	370 B	2.5	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	12 J	3.3	pg/g	SW846 8290
Total HpCDF	810 Q,B	2.9	pg/g	SW846 8290
OCDF	140 B	3.9	pg/g	SW846 8290

(Continued on next page)

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-015

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-032 **Work Order #...:** FXQW51AA **Matrix.....:** SOLID

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	(40 - 135)
13C-1,2,3,7,8-PeCDD	65	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	68	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	62	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	55	(40 - 135)
13C-OCDD	38 *	(40 - 135)
13C-2,3,7,8-TCDF	68	(40 - 135)
13C-1,2,3,7,8-PeCDF	57	(40 - 135)
13C-2,3,4,7,8-PeCDF	57	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	67	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	62	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	64	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	65	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	47	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	44	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

* Surrogate recovery is outside stated control limits.

US ARMY CORPS OF ENGINEERS

Client Sample ID: M030925-015

Trace Level Organic Compounds

Lot-Sample #...: H3I060138-032 **Work Order #...:** FXQW51AD **Matrix.....:** SOLID
Date Sampled...: 08/27/03 **Date Received..:** 09/06/03
Prep Date.....: 09/09/03 **Analysis Date..:** 09/23/03
Prep Batch #...: 3252134
Dilution Factor: 1
% Moisture.....: 58

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDF	**4.1 Q**	**0.99**	**pg/g**	**SW846 8290**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	74	(40 - 135)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXTNR1AA **Matrix.....:** SOLID
MB Lot-Sample #: H3I080000-409

Prep Date.....: 09/08/03
Analysis Date..: 09/16/03 **Prep Batch #...:** 3251409
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.30	pg/g	SW846 8290
Total TCDD	ND	0.30	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.14	pg/g	SW846 8290
Total PeCDD	ND	0.14	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.10	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.11	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.10	pg/g	SW846 8290
Total HxCDD	ND	0.11	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	**0.21 J**	**0.091**	**pg/g**	**SW846 8290**
Total HpCDD	**0.21 J**	**0.091**	**pg/g**	**SW846 8290**
OCDD	**0.55 J**	**0.092**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.19	pg/g	SW846 8290
Total TCDF	ND	0.19	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.081	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.070	pg/g	SW846 8290
Total PeCDF	ND	0.075	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	ND	0.051	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	ND	0.056	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.059	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.072	pg/g	SW846 8290
Total HxCDF	ND	0.058	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	ND	0.067	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	ND	0.076	pg/g	SW846 8290
Total HpCDF	ND	0.071	pg/g	SW846 8290
OCDF	**0.35 Q,J**	**0.099**	**pg/g**	**SW846 8290**

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXTNR1AA **Matrix.....:** SOLID

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS		
13C-2,3,7,8-TCDD	80	(40 - 135)		
13C-1,2,3,7,8-PeCDD	84	(40 - 135)		
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)		
13C-1,2,3,6,7,8-HxCDD	75	(40 - 135)		
13C-1,2,3,4,6,7,8-HpCDD	88	(40 - 135)		
13C-OCDD	77	(40 - 135)		
13C-2,3,7,8-TCDF	84	(40 - 135)		
13C-1,2,3,7,8-PeCDF	84	(40 - 135)		
13C-2,3,4,7,8-PeCDF	85	(40 - 135)		
13C-1,2,3,4,7,8-HxCDF	82	(40 - 135)		
13C-1,2,3,6,7,8-HxCDF	80	(40 - 135)		
13C-2,3,4,6,7,8-HxCDF	80	(40 - 135)		
13C-1,2,3,7,8,9-HxCDF	82	(40 - 135)		
13C-1,2,3,4,6,7,8-HpCDF	84	(40 - 135)		
13C-1,2,3,4,7,8,9-HpCDF	85	(40 - 135)		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXTNR1AC Matrix.....: SOLID
LCS Lot-Sample#: H3I080000-409
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	101	(70 - 115)	SW846 8290
1,2,3,7,8-PeCDD	100	(76 - 113)	SW846 8290
1,2,3,4,7,8-HxCDD	98	(68 - 120)	SW846 8290
1,2,3,6,7,8-HxCDD	104	(76 - 114)	SW846 8290
1,2,3,7,8,9-HxCDD	98	(62 - 123)	SW846 8290
1,2,3,4,6,7,8-HpCDD	97 B	(74 - 109)	SW846 8290
OCDD	99 B	(75 - 112)	SW846 8290
2,3,7,8-TCDF	93	(75 - 115)	SW846 8290
1,2,3,7,8-PeCDF	98	(75 - 117)	SW846 8290
2,3,4,7,8-PeCDF	92	(63 - 126)	SW846 8290
1,2,3,4,7,8-HxCDF	89	(78 - 114)	SW846 8290
1,2,3,6,7,8-HxCDF	90	(78 - 114)	SW846 8290
2,3,4,6,7,8-HxCDF	89	(74 - 112)	SW846 8290
1,2,3,7,8,9-HxCDF	85	(60 - 130)	SW846 8290
1,2,3,4,6,7,8-HpCDF	89	(72 - 111)	SW846 8290
1,2,3,4,7,8,9-HpCDF	92	(60 - 125)	SW846 8290
OCDF	97 B	(69 - 128)	SW846 8290

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXTNR1AC **Matrix.....:** SOLID
LCS Lot-Sample#: H3I080000-409

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
13C-OCDD	74	(40 - 135)
13C-2,3,7,8-TCDF	80	(40 - 135)
13C-1,2,3,7,8-PeCDF	78	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	78	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	79	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	79	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXTNR1AC Matrix.....: SOLID
LCS Lot-Sample#: H3I080000-409
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	20.0	20.2	pg/g	101	SW846 8290
1,2,3,7,8-PeCDD	100	100	pg/g	100	SW846 8290
1,2,3,4,7,8-HxCDD	100	97.7	pg/g	98	SW846 8290
1,2,3,6,7,8-HxCDD	100	104	pg/g	104	SW846 8290
1,2,3,7,8,9-HxCDD	100	98.0	pg/g	98	SW846 8290
1,2,3,4,6,7,8-HpCDD	100	96.5 B	pg/g	97	SW846 8290
OCDD	200	198 B	pg/g	99	SW846 8290
2,3,7,8-TCDF	20.0	18.7	pg/g	93	SW846 8290
1,2,3,7,8-PeCDF	100	97.7	pg/g	98	SW846 8290
2,3,4,7,8-PeCDF	100	92.2	pg/g	92	SW846 8290
1,2,3,4,7,8-HxCDF	100	88.8	pg/g	89	SW846 8290
1,2,3,6,7,8-HxCDF	100	89.9	pg/g	90	SW846 8290
2,3,4,6,7,8-HxCDF	100	89.0	pg/g	89	SW846 8290
1,2,3,7,8,9-HxCDF	100	85.5	pg/g	85	SW846 8290
1,2,3,4,6,7,8-HpCDF	100	89.0	pg/g	89	SW846 8290
1,2,3,4,7,8,9-HpCDF	100	91.5	pg/g	92	SW846 8290
OCDF	200	195 B	pg/g	97	SW846 8290

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXTNR1AC **Matrix.....:** SOLID
LCS Lot-Sample#: H3I080000-409

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	81	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	74	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
13C-OCDD	74	(40 - 135)
13C-2,3,7,8-TCDF	80	(40 - 135)
13C-1,2,3,7,8-PeCDF	78	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	78	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	80	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	79	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	79	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

MATRIX SPIKE SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXQVR1AD-MS Matrix.....: SOLID
MS Lot-Sample #: H3I060138-001 FXQVR1AE-MSD
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1 % Moisture.....: 42

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,3,7,8-TCDD	134 a	(70 - 116)			SW846 8290
	155 a	(70 - 116)	12	(0-20)	SW846 8290
1,2,3,7,8-PeCDD	102	(75 - 113)			SW846 8290
	109	(75 - 113)	6.2	(0-20)	SW846 8290
1,2,3,4,7,8-HxCDD	99	(62 - 130)			SW846 8290
	103	(62 - 130)	4.6	(0-20)	SW846 8290
1,2,3,6,7,8-HxCDD	106	(75 - 114)			SW846 8290
	110	(75 - 114)	3.7	(0-20)	SW846 8290
1,2,3,7,8,9-HxCDD	97	(59 - 128)			SW846 8290
	104	(59 - 128)	6.4	(0-20)	SW846 8290
1,2,3,4,6,7,8-HpCDD	123 B	(40 - 154)			SW846 8290
	148 B	(40 - 154)	15	(0-20)	SW846 8290
OCDD	207 a,B	(33 - 154)			SW846 8290
	310 a,p,B	(33 - 154)	29	(0-20)	SW846 8290
2,3,7,8-TCDF	115	(65 - 130)			SW846 8290
	122	(65 - 130)	5.2	(0-20)	SW846 8290
1,2,3,7,8-PeCDF	97	(67 - 123)			SW846 8290
	102	(67 - 123)	4.8	(0-20)	SW846 8290
2,3,4,7,8-PeCDF	97	(62 - 126)			SW846 8290
	102	(62 - 126)	4.6	(0-20)	SW846 8290
1,2,3,4,7,8-HxCDF	106 Q	(74 - 114)			SW846 8290
	118 a,Q	(74 - 114)	10	(0-20)	SW846 8290
1,2,3,6,7,8-HxCDF	97	(66 - 114)			SW846 8290
	102	(66 - 114)	4.9	(0-20)	SW846 8290
2,3,4,6,7,8-HxCDF	94	(65 - 118)			SW846 8290
	99	(65 - 118)	5.3	(0-20)	SW846 8290
1,2,3,7,8,9-HxCDF	88	(60 - 130)			SW846 8290
	94	(60 - 130)	6.1	(0-20)	SW846 8290
1,2,3,4,6,7,8-HpCDF	131	(51 - 133)			SW846 8290
	188 a,p	(51 - 133)	30	(0-20)	SW846 8290
1,2,3,4,7,8,9-HpCDF	92	(60 - 125)			SW846 8290
	96	(60 - 125)	4.6	(0-20)	SW846 8290
OCDF	77 B	(52 - 137)			SW846 8290
	204 a,p,B	(52 - 137)	68	(0-20)	SW846 8290

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXQVR1AD-MS **Matrix.....:** SOLID
MS Lot-Sample #: H3I060138-001 FXQVR1AE-MSD

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	(40 - 135)
	85	(40 - 135)
13C-1,2,3,7,8-PeCDD	89	(40 - 135)
	90	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	88	(40 - 135)
	87	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	81	(40 - 135)
	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	79	(40 - 135)
	79	(40 - 135)
13C-OCDD	66	(40 - 135)
	64	(40 - 135)
13C-2,3,7,8-TCDF	87	(40 - 135)
	88	(40 - 135)
13C-1,2,3,7,8-PeCDF	86	(40 - 135)
	86	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
	84	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	85	(40 - 135)
	86	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
	84	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	82	(40 - 135)
	84	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
	85	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	77	(40 - 135)
	77	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	77	(40 - 135)
	85	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

p Relative percent difference (RPD) is outside stated control limits.

Q Estimated maximum possible concentration (EMPC).

MATRIX SPIKE SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXQVR1AD-MS Matrix.....: SOLID
MS Lot-Sample #: H3I060138-001 FXQVR1AE-MSD
Date Sampled...: 08/26/03 Date Received..: 09/06/03
Prep Date.....: 09/08/03 Analysis Date..: 09/16/03
Prep Batch #...: 3251409
Dilution Factor: 1 % Moisture.....: 42

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,3,7,8-TCDD	7.7	34.7	54.2	pg/g	134 a		SW846 8290
	7.7	34.7	61.4	pg/g	155 a	12	SW846 8290
1,2,3,7,8-PeCDD	2.1	174	179	pg/g	102		SW846 8290
	2.1	174	191	pg/g	109	6.2	SW846 8290
1,2,3,4,7,8-HxCDD	0.52	174	172	pg/g	99		SW846 8290
	0.52	174	180	pg/g	103	4.6	SW846 8290
1,2,3,6,7,8-HxCDD	2.9	174	187	pg/g	106		SW846 8290
	2.9	174	194	pg/g	110	3.7	SW846 8290
1,2,3,7,8,9-HxCDD	1.4	174	170	pg/g	97		SW846 8290
	1.4	174	182	pg/g	104	6.4	SW846 8290
1,2,3,4,6,7,8-HpCDD	35	174	250	pg/g	123 B		SW846 8290
	35	174	291	pg/g	148 B	15	SW846 8290
OCDD	320	347	1040	pg/g	207		SW846 8290
	Qualifiers: a,B						
	320	347	1400	pg/g	310	29	SW846 8290
	Qualifiers: a,p,B						
2,3,7,8-TCDF	3.4	34.7	43.4	pg/g	115		SW846 8290
	3.4	34.7	45.7	pg/g	122	5.2	SW846 8290
1,2,3,7,8-PeCDF	1.3	174	170	pg/g	97		SW846 8290
	1.3	174	179	pg/g	102	4.8	SW846 8290
2,3,4,7,8-PeCDF	3.1	174	171	pg/g	97		SW846 8290
	3.1	174	179	pg/g	102	4.6	SW846 8290
1,2,3,4,7,8-HxCDF	16	174	199	pg/g	106 Q		SW846 8290
	16	174	220	pg/g	118	10	SW846 8290
	Qualifiers: a,Q						
1,2,3,6,7,8-HxCDF	2.7	174	171	pg/g	97		SW846 8290
	2.7	174	180	pg/g	102	4.9	SW846 8290
2,3,4,6,7,8-HxCDF	0.98	174	165	pg/g	94		SW846 8290
	0.98	174	173	pg/g	99	5.3	SW846 8290
1,2,3,7,8,9-HxCDF	0.13	174	153	pg/g	88		SW846 8290
	0.13	174	162	pg/g	94	6.1	SW846 8290
1,2,3,4,6,7,8-HpCDF	54	174	280	pg/g	131		SW846 8290
	54	174	380	pg/g	188	30	SW846 8290
	Qualifiers: a,p						
1,2,3,4,7,8,9-HpCDF	3.8	174	163	pg/g	92		SW846 8290
	3.8	174	171	pg/g	96	4.6	SW846 8290
OCDF	160	347	429	pg/g	77 B		SW846 8290
	160	347	871	pg/g	204	68	SW846 8290
	Qualifiers: a,p,B						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXQVR1AD-MS **Matrix.....:** SOLID
MS Lot-Sample #: H3I060138-001 FXQVR1AE-MSD

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	(40 - 135)
	85	(40 - 135)
13C-1,2,3,7,8-PeCDD	89	(40 - 135)
	90	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	88	(40 - 135)
	87	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	81	(40 - 135)
	81	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	79	(40 - 135)
	79	(40 - 135)
13C-OCDD	66	(40 - 135)
	64	(40 - 135)
13C-2,3,7,8-TCDF	87	(40 - 135)
	88	(40 - 135)
13C-1,2,3,7,8-PeCDF	86	(40 - 135)
	86	(40 - 135)
13C-2,3,4,7,8-PeCDF	80	(40 - 135)
	84	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	85	(40 - 135)
	86	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	82	(40 - 135)
	84	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	82	(40 - 135)
	84	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	83	(40 - 135)
	85	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	77	(40 - 135)
	77	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	77	(40 - 135)
	85	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

p Relative percent difference (RPD) is outside stated control limits.

Q Estimated maximum possible concentration (EMPC).

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXVFE1AA **Matrix.....:** SOLID
MB Lot-Sample #: H3I090000-134

Prep Date.....: 09/09/03
Analysis Date..: 09/18/03 **Prep Batch #...:** 3252134
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.19	pg/g	SW846 8290
Total TCDD	ND	0.19	pg/g	SW846 8290
1,2,3,7,8-PeCDD	**0.26 J**	**0.13**	**pg/g**	**SW846 8290**
Total PeCDD	**0.26 J**	**0.13**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDD	ND	0.16	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.19	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.17	pg/g	SW846 8290
Total HxCDD	ND	0.17	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	ND	0.18	pg/g	SW846 8290
Total HpCDD	ND	0.18	pg/g	SW846 8290
OCDD	**0.76 J**	**0.22**	**pg/g**	**SW846 8290**
2,3,7,8-TCDF	ND	0.20	pg/g	SW846 8290
Total TCDF	ND	0.20	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.13	pg/g	SW846 8290
2,3,4,7,8-PeCDF	**0.12 Q,J**	**0.097**	**pg/g**	**SW846 8290**
Total PeCDF	**0.12 Q,J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,4,7,8-HxCDF	**0.16 Q,J**	**0.11**	**pg/g**	**SW846 8290**
1,2,3,6,7,8-HxCDF	**0.067 Q,J**	**0.12**	**pg/g**	**SW846 8290**
2,3,4,6,7,8-HxCDF	ND	0.12	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.14	pg/g	SW846 8290
Total HxCDF	**0.22 Q,J**	**0.12**	**pg/g**	**SW846 8290**
1,2,3,4,6,7,8-HpCDF	**0.25 Q,J**	**0.16**	**pg/g**	**SW846 8290**
1,2,3,4,7,8,9-HpCDF	ND	0.17	pg/g	SW846 8290
Total HpCDF	**0.25 Q,J**	**0.16**	**pg/g**	**SW846 8290**
OCDF	**0.45 Q,J**	**0.25**	**pg/g**	**SW846 8290**

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXVFE1AA **Matrix.....:** SOLID

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS		
13C-2,3,7,8-TCDD	79	(40 - 135)		
13C-1,2,3,7,8-PeCDD	82	(40 - 135)		
13C-1,2,3,4,7,8-HxCDD	82	(40 - 135)		
13C-1,2,3,6,7,8-HxCDD	73	(40 - 135)		
13C-1,2,3,4,6,7,8-HpCDD	82	(40 - 135)		
13C-OCDD	68	(40 - 135)		
13C-2,3,7,8-TCDF	76	(40 - 135)		
13C-1,2,3,7,8-PeCDF	70	(40 - 135)		
13C-2,3,4,7,8-PeCDF	73	(40 - 135)		
13C-1,2,3,4,7,8-HxCDF	78	(40 - 135)		
13C-1,2,3,6,7,8-HxCDF	72	(40 - 135)		
13C-2,3,4,6,7,8-HxCDF	74	(40 - 135)		
13C-1,2,3,7,8,9-HxCDF	79	(40 - 135)		
13C-1,2,3,4,6,7,8-HpCDF	67	(40 - 135)		
13C-1,2,3,4,7,8,9-HpCDF	79	(40 - 135)		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXVFE1AC Matrix.....: SOLID
LCS Lot-Sample#: H3I090000-134
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	99	(70 - 115)	SW846 8290
1,2,3,7,8-PeCDD	100 B	(76 - 113)	SW846 8290
1,2,3,4,7,8-HxCDD	93	(68 - 120)	SW846 8290
1,2,3,6,7,8-HxCDD	101	(76 - 114)	SW846 8290
1,2,3,7,8,9-HxCDD	97	(62 - 123)	SW846 8290
1,2,3,4,6,7,8-HpCDD	92	(74 - 109)	SW846 8290
OCDD	92 B	(75 - 112)	SW846 8290
2,3,7,8-TCDF	95	(75 - 115)	SW846 8290
1,2,3,7,8-PeCDF	102	(75 - 117)	SW846 8290
2,3,4,7,8-PeCDF	99 B	(63 - 126)	SW846 8290
1,2,3,4,7,8-HxCDF	95 B	(78 - 114)	SW846 8290
1,2,3,6,7,8-HxCDF	95 B	(78 - 114)	SW846 8290
2,3,4,6,7,8-HxCDF	94	(74 - 112)	SW846 8290
1,2,3,7,8,9-HxCDF	91	(60 - 130)	SW846 8290
1,2,3,4,6,7,8-HpCDF	91 B	(72 - 111)	SW846 8290
1,2,3,4,7,8,9-HpCDF	95	(60 - 125)	SW846 8290
OCDF	86 B	(69 - 128)	SW846 8290

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXVFE1AC **Matrix.....:** SOLID
LCS Lot-Sample#: H3I090000-134

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	79	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	74	(40 - 135)
13C-OCDD	61	(40 - 135)
13C-2,3,7,8-TCDF	73	(40 - 135)
13C-1,2,3,7,8-PeCDF	72	(40 - 135)
13C-2,3,4,7,8-PeCDF	72	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	72	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	72	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	76	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	67	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	71	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXVFE1AC Matrix.....: SOLID
LCS Lot-Sample#: H3I090000-134
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	20.0	19.9	pg/g	99	SW846 8290
1,2,3,7,8-PeCDD	100	100 B	pg/g	100	SW846 8290
1,2,3,4,7,8-HxCDD	100	93.2	pg/g	93	SW846 8290
1,2,3,6,7,8-HxCDD	100	101	pg/g	101	SW846 8290
1,2,3,7,8,9-HxCDD	100	96.7	pg/g	97	SW846 8290
1,2,3,4,6,7,8-HpCDD	100	91.6	pg/g	92	SW846 8290
OCDD	200	184 B	pg/g	92	SW846 8290
2,3,7,8-TCDF	20.0	19.0	pg/g	95	SW846 8290
1,2,3,7,8-PeCDF	100	102	pg/g	102	SW846 8290
2,3,4,7,8-PeCDF	100	98.8 B	pg/g	99	SW846 8290
1,2,3,4,7,8-HxCDF	100	94.5 B	pg/g	95	SW846 8290
1,2,3,6,7,8-HxCDF	100	95.4 B	pg/g	95	SW846 8290
2,3,4,6,7,8-HxCDF	100	93.9	pg/g	94	SW846 8290
1,2,3,7,8,9-HxCDF	100	91.3	pg/g	91	SW846 8290
1,2,3,4,6,7,8-HpCDF	100	91.4 B	pg/g	91	SW846 8290
1,2,3,4,7,8,9-HpCDF	100	94.9	pg/g	95	SW846 8290
OCDF	200	172 B	pg/g	86	SW846 8290

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXVFE1AC **Matrix.....:** SOLID
LCS Lot-Sample#: H3I090000-134

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(40 - 135)
13C-1,2,3,7,8-PeCDD	79	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	70	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	74	(40 - 135)
13C-OCDD	61	(40 - 135)
13C-2,3,7,8-TCDF	73	(40 - 135)
13C-1,2,3,7,8-PeCDF	72	(40 - 135)
13C-2,3,4,7,8-PeCDF	72	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	77	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	72	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	72	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	76	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	67	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	71	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

MATRIX SPIKE SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXQWK1AD-MS Matrix.....: SOLID
MS Lot-Sample #: H3I060138-019 FXQWK1AE-MSD
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1 % Moisture.....: 56

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,3,7,8-TCDD	103	(70 - 116)			SW846 8290
	95	(70 - 116)	7.3	(0-20)	SW846 8290
1,2,3,7,8-PeCDD	96 B	(75 - 113)			SW846 8290
	96 B	(75 - 113)	0.50	(0-20)	SW846 8290
1,2,3,4,7,8-HxCDD	96	(62 - 130)			SW846 8290
	92	(62 - 130)	3.6	(0-20)	SW846 8290
1,2,3,6,7,8-HxCDD	100	(75 - 114)			SW846 8290
	96	(75 - 114)	4.3	(0-20)	SW846 8290
1,2,3,7,8,9-HxCDD	99	(59 - 128)			SW846 8290
	94	(59 - 128)	5.4	(0-20)	SW846 8290
1,2,3,4,6,7,8-HpCDD	95	(40 - 154)			SW846 8290
	83	(40 - 154)	10	(0-20)	SW846 8290
OCDD	95 B	(33 - 154)			SW846 8290
	57 B	(33 - 154)	20	(0-20)	SW846 8290
2,3,7,8-TCDF	100	(65 - 130)			SW846 8290
	97	(65 - 130)	3.2	(0-20)	SW846 8290
1,2,3,7,8-PeCDF	104	(67 - 123)			SW846 8290
	104	(67 - 123)	0.15	(0-20)	SW846 8290
2,3,4,7,8-PeCDF	98 B	(62 - 126)			SW846 8290
	96 B	(62 - 126)	1.8	(0-20)	SW846 8290
1,2,3,4,7,8-HxCDF	95 B,Q	(74 - 114)			SW846 8290
	93 B,Q	(74 - 114)	2.4	(0-20)	SW846 8290
1,2,3,6,7,8-HxCDF	95 B	(66 - 114)			SW846 8290
	90 B	(66 - 114)	5.2	(0-20)	SW846 8290
2,3,4,6,7,8-HxCDF	94	(65 - 118)			SW846 8290
	92	(65 - 118)	1.7	(0-20)	SW846 8290
1,2,3,7,8,9-HxCDF	92	(60 - 130)			SW846 8290
	87	(60 - 130)	5.3	(0-20)	SW846 8290
1,2,3,4,6,7,8-HpCDF	94 B	(51 - 133)			SW846 8290
	92 B	(51 - 133)	1.6	(0-20)	SW846 8290
1,2,3,4,7,8,9-HpCDF	95	(60 - 125)			SW846 8290
	87	(60 - 125)	7.9	(0-20)	SW846 8290
OCDF	40 a,B	(52 - 137)			SW846 8290
	41 a,B	(52 - 137)	3.1	(0-20)	SW846 8290

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXQWK1AD-MS **Matrix.....:** SOLID
MS Lot-Sample #: H3I060138-019 FXQWK1AE-MSD

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(40 - 135)
	82	(40 - 135)
13C-1,2,3,7,8-PeCDD	87	(40 - 135)
	86	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	77	(40 - 135)
	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	69	(40 - 135)
	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
	75	(40 - 135)
13C-OCDD	70	(40 - 135)
	58	(40 - 135)
13C-2,3,7,8-TCDF	77	(40 - 135)
	79	(40 - 135)
13C-1,2,3,7,8-PeCDF	75	(40 - 135)
	75	(40 - 135)
13C-2,3,4,7,8-PeCDF	78	(40 - 135)
	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	72	(40 - 135)
	75	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	68	(40 - 135)
	71	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	69	(40 - 135)
	71	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	72	(40 - 135)
	75	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	60	(40 - 135)
	57	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	61	(40 - 135)
	58	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Q Estimated maximum possible concentration (EMPC).

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 Work Order #...: FXQWK1AD-MS Matrix.....: SOLID
MS Lot-Sample #: H3I060138-019 FXQWK1AE-MSD
Date Sampled...: 08/27/03 Date Received..: 09/06/03
Prep Date.....: 09/09/03 Analysis Date..: 09/19/03
Prep Batch #...: 3252134
Dilution Factor: 1 % Moisture.....: 56

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,3,7,8-TCDD	ND	45.0	46.2	pg/g	103		SW846 8290
	ND	45.0	43.0	pg/g	95	7.3	SW846 8290
1,2,3,7,8-PeCDD	ND	225	216	pg/g	96 B		SW846 8290
	ND	225	215	pg/g	96 B	0.50	SW846 8290
1,2,3,4,7,8-HxCDD	ND	225	215	pg/g	96		SW846 8290
	ND	225	208	pg/g	92	3.6	SW846 8290
1,2,3,6,7,8-HxCDD	1.7	225	228	pg/g	100		SW846 8290
	1.7	225	218	pg/g	96	4.3	SW846 8290
1,2,3,7,8,9-HxCDD	ND	225	223	pg/g	99		SW846 8290
	ND	225	211	pg/g	94	5.4	SW846 8290
1,2,3,4,6,7,8-HpCDD	46	225	259	pg/g	95		SW846 8290
	46	225	233	pg/g	83	10	SW846 8290
OCDD	500	450	922	pg/g	95 B		SW846 8290
	500	450	752	pg/g	57 B	20	SW846 8290
2,3,7,8-TCDF	2.7	45.0	47.9	pg/g	100		SW846 8290
	2.7	45.0	46.4	pg/g	97	3.2	SW846 8290
1,2,3,7,8-PeCDF	0.65	225	234	pg/g	104		SW846 8290
	0.65	225	235	pg/g	104	0.15	SW846 8290
2,3,4,7,8-PeCDF	1.0	225	221	pg/g	98 B		SW846 8290
	1.0	225	217	pg/g	96 B	1.8	SW846 8290
1,2,3,4,7,8-HxCDF	4.0	225	219	pg/g	95 B,Q		SW846 8290
	4.0	225	213	pg/g	93 B,Q	2.4	SW846 8290
1,2,3,6,7,8-HxCDF	1.2	225	215	pg/g	95 B		SW846 8290
	1.2	225	204	pg/g	90 B	5.2	SW846 8290
2,3,4,6,7,8-HxCDF	1.7	225	213	pg/g	94		SW846 8290
	1.7	225	209	pg/g	92	1.7	SW846 8290
1,2,3,7,8,9-HxCDF	ND	225	206	pg/g	92		SW846 8290
	ND	225	196	pg/g	87	5.3	SW846 8290
1,2,3,4,6,7,8-HpCDF	24	225	235	pg/g	94 B		SW846 8290
	24	225	231	pg/g	92 B	1.6	SW846 8290
1,2,3,4,7,8,9-HpCDF	ND	225	213	pg/g	95		SW846 8290
	ND	225	197	pg/g	87	7.9	SW846 8290
OCDF	13	450	193	pg/g	40 a,B		SW846 8290
	13	450	199	pg/g	41 a,B	3.1	SW846 8290

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3I060138 **Work Order #...:** FXQWK1AD-MS **Matrix.....:** SOLID
MS Lot-Sample #: H3I060138-019 FXQWK1AE-MSD

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(40 - 135)
	82	(40 - 135)
13C-1,2,3,7,8-PeCDD	87	(40 - 135)
	86	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	77	(40 - 135)
	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	69	(40 - 135)
	73	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	80	(40 - 135)
	75	(40 - 135)
13C-OCDD	70	(40 - 135)
	58	(40 - 135)
13C-2,3,7,8-TCDF	77	(40 - 135)
	79	(40 - 135)
13C-1,2,3,7,8-PeCDF	75	(40 - 135)
	75	(40 - 135)
13C-2,3,4,7,8-PeCDF	78	(40 - 135)
	78	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	72	(40 - 135)
	75	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	68	(40 - 135)
	71	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	69	(40 - 135)
	71	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	72	(40 - 135)
	75	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	60	(40 - 135)
	57	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	61	(40 - 135)
	58	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Q Estimated maximum possible concentration (EMPC).

a Spiked analyte recovery is outside stated control limits.

#3I060138

U.S. ARMY CORPS OF ENGINEERS
ECB Omaha LABORATORY

CHAIN OF CUSTODY RECORD
05-SEP-03 12:38 PM

ECB Omaha COOLER NUMBER: 9051

Project Name: WES - Water Samples

Project Number: 6035
Work Order Number: WG13410
Transfer of Samples from ECB Omaha Laboratory to: STL

DATE / TIME	TYPE	CLIENT SAMPLE IDENTIFIER/TEST(S)	CONTAINER(S)	SAMPLE NO.
26-AUG-03 12:00 AM		114581 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-023
26-AUG-03 12:00 AM		114582 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-024
26-AUG-03 12:00 AM		114583 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-025
26-AUG-03 12:00 AM		114584 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-026
26-AUG-03 12:00 AM		114585 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-027
26-AUG-03 12:00 AM		114586 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-028
26-AUG-03 12:00 AM		114587 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-029
26-AUG-03 12:00 AM		114588 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-030
26-AUG-03 12:00 AM		114589 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-031
26-AUG-03 12:00 AM		114590 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-032
26-AUG-03 12:00 AM		114591 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-033
26-AUG-03 12:00 AM		114592 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-034
26-AUG-03 12:00 AM		114593 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-035
26-AUG-03 12:00 AM		114594 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-036
26-AUG-03 12:00 AM		114595 Test request(s): Soil DIOXIN-8290-35 EPA 8290	1-8 oz glass	M030916-037

Recd temp. 3°C
Custody seals intact
1 cooler Fedex #
7908 9202 3608
MFH 9-6-03

Relinquished By: Shelley Stuenkel
Date/Time: 9/5/03 1300

Received By: Matthew F. Howard
Date/Time: 9-6-03, 09:00

H3I060138

U.S. ARMY CORPS OF ENGINEERS
ECB Omaha LABORATORY

CHAIN OF CUSTODY RECORD
05-SEP-03 12:38 PM

ECB Omaha COOLER NUMBER: 9051

Project Name: WES - Water Samples

Project Number: 6035
Work Order Number: WG13410
Transfer of Samples from ECB Omaha Laboratory to: STL

DATE / TIME	TYPE	CLIENT SAMPLE IDENTIFIER/TEST(S)	CONTAINER(S)	SAMPLE NO.
26-AUG-03 12:00 AM		114596	1-8 oz glass	M030916-038
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
26-AUG-03 12:00 AM		114597	1-8 oz glass	M030916-039
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114813	1-8 oz glass	M030925-001
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114814	1-8 oz glass	M030925-002
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114815	1-8 oz glass	M030925-003
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114816	1-8 oz glass	M030925-004
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114817	1-8 oz glass	M030925-005
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114818	1-8 oz glass	M030925-006
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114819	1-8 oz glass	M030925-007
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114820	1-8 oz glass	M030925-008
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114821	1-8 oz glass	M030925-009
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114822	1-8 oz glass	M030925-010
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114823	1-8 oz glass	M030925-011
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114824	1-8 oz glass	M030925-012
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114825	1-8 oz glass	M030925-013
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		

Relinquished By: Shelley Swink
Date/Time: 9/5/03 1500

Received By: Matthew F. Howard
Date/Time: 9-6-03, 09:00

H3I060138

U.S. ARMY CORPS OF ENGINEERS
ECB Omaha LABORATORY

CHAIN OF CUSTODY RECORD
05-SEP-03 12:38 PM

ECB Omaha COOLER NUMBER: 9051

Project Name: WES - Water Samples

Project Number: 6035
Work Order Number: WG13410
Transfer of Samples from ECB Omaha Laboratory to: STL

DATE / TIME	TYPE	CLIENT SAMPLE IDENTIFIER/TEST(S)	CONTAINER(S)	SAMPLE NO.
27-AUG-03 12:00 AM		114826	1-8 oz glass	M030925-014
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		
27-AUG-03 12:00 AM		114827	1-8 oz glass	M030925-015
		Test request(s): Soil DIOXIN-8290-35 EPA 8290		

Relinquished By: Stacey Swink

Date/Time: 9/5/03 1300

Received By: Matthew T. Howard

Date/Time: 9-6-03 09:00
MFH 9-6-03

STL KNOXVILLE
SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

CLIENT: U.S. Army Corps PROJECT: WES-Water samples Lot No.: H3I060138

TO BE COMPLETED BY SAMPLE RECEIPT ASSOCIATE:

		YES	NO	NA
1.	Sample Receipt:			
a.	Do sample container labels match COC? (IDs, Dates, Times)	✓	—	—
b.	Is the cooler temperature within acceptance limits? (NOTE: North Carolina, 1668, 1613B: 0-4°C; VOST: 10°C)	✓	—	—
c.	Were samples received with correct chemical preservative (excluding Encore)?	—	—	✓
d.	Were custody seals present/intact on cooler and/or containers?	✓	—	
e.	Were all of the samples listed on the COC received?	✓	—	—
f.	Were all of the sample containers received intact?	✓	—	—
g.	Were containers received for VOAs received without headspace?	—	—	✓
h.	Were samples received in the appropriate containers?	✓	—	—
i.	Did you check for residual chlorine, if necessary?	—	—	✓
j.	Were samples received within 1/2 of the holding time?	✓	—	—
k.	Were samples screened for radioactivity?	—		✓
l.	For aqueous samples for SOG tests (i.e., 1613B, 1668A, 8290, LR PAHs), does the sample(s) have visible solids present?	—	—	✓
	If yes, was SOG staff notified?	—		✓
m.	Were client's sample documents (RFA/COC) received?	✓	—	—
n.	Has the RFA/COC been relinquished? (Signed, Dated, Timed)	✓	—	—
o.	Are test/parameters listed for each sample?	✓	—	—
p.	Is the matrix of the samples noted?	✓	—	—
q.	Is the date/time of sample collection noted?	✓	—	—
r.	Is the client and project name/No. identified?	✓	—	—
s.	Was the sampler identified on the RFA/COC?	—	✓	

SAMPLE RECEIVING ASSOCIATE: Matthew J. Howard DATE: 9-6-03

TO BE COMPLETED BY PROJECT MANAGER :

		YES	NO	NA
1.	Project manager "Sample Greet":			
a.	Quote number to be logged-in under 26827			
b.	Informed Login associates of special instructions ?	✓	—	—

PROJECT MANAGER : [signature] DATE: 9/8/03

Client Sample ID	Analysis Requested	Condition (see legend)	Comments/Action

☐ Client informed on _____ by _____. Person contacted: _____.
☐ Noted actions in comments section above.
☐ No action necessary; process as is.
Project Manager: _____ Date: _____

APPENDIX I

EIGHTEENMILE CREEK AOC

SCOPE OF WORK

SCOPE OF WORK

EIGHTEENMILE CREEK AREA OF CONCERN
SEDIMENT SAMPLING AND TESTING
FY 2003

1. *Introduction*. The Engineering Research and Development Center - Environmental Laboratory (ERDC-EL) shall provide the personnel, labor, materials, and laboratory facilities to perform physical, chemical, and biological testing on sediment samples collected from the Eighteenmile Creek Area of Concern (AOC) vicinity, as described in this scope of work (SOW) and in the following paragraphs.

2. *Responsibility.* The Buffalo District Corps of Engineers is responsible for providing the sample containers, shipping coolers, and personnel and boat facilities for obtaining surface sediment grab samples from the Eighteenmile Creek AOC and for shipping the samples to ERDC-EL for testing.

ERDC-EL is responsible for providing all the laboratory facilities for chemical, physical, and biological testing. The ERDC-EL will be directly supplied with the samples for chemical, physical, and biological testing.

3. Sediment Sampling

3a. *Sediment Sampling at EMC-1, EMC-2 and EMC-3 (EBU-1).* This area is comprised of Eighteenmile Creek Biological Unit -1 (EBU-1) which is represented by sampling sites EMC-1, EMC-2, and EMC-3 (Figure 1). At each of the sediment sampling sites a total of five plus quarts will be collected. Material from each of the three sites for the biological unit shall be stored in a separate stainless steel pan. The sample material from each location shall be homogenized before subsampling. From this sample a 32-ounce jar shall be provided for sediment chemistry. At the end of the sampling effort for the entire biological unit, the three separate samples are to be composited and homogenized (quartering technique, see USACE EM 200-1-3) into one sample. From this sample, a three-gallon sample shall be provided for biological, chemical and particle size testing. This sample will be labeled EBU-1. The sample analysis parameters are summarized in Table 1.

3b. *Sediment Sampling at EMC-4, EMC-5, and EMC-6 (EBU-2).* This area is comprised of Eighteenmile Creek Biological Unit - 2 (EBU-2) which is represented by sampling sites EMC-4, EMC-5, and EMC-6 (Figure 1). At each of the sediment sampling sites a total of five plus quarts will be collected. Material from each of the three sites for the biological unit shall be stored in a separate stainless steel pan. The sample material from each location shall be homogenized before subsampling. From this sample a 32-ounce jar shall be provided for sediment chemistry. For site ENC-4 an eight ounce jar shall be filled for QA PCB testing. At the end of the sampling effort for the entire biological unit, the three separate samples are to be composited and homogenized (quartering technique, see USACE EM 200-1-3) into one

sample. From this sample, a three-gallon sample shall be provided for biological, chemical and particle size testing. This sample will be labeled EBU-2. The sample analysis parameters are summarized in Table 1.

3c. *Sediment Sampling at EMC-7, EMC-8 and EMC-9 (EBU-3)*. This area is comprised of Eighteenmile Creek Biological Unit – 3 (EBU-3) which is represented by sampling sites EMC-7, EMC-8, and EMC-9 (Figure 1). At each of the sediment sampling sites a total of five plus quarts will be collected. Material from each of the three sites for the biological unit shall be stored in a separate stainless steel pan. The sample material from each location shall be homogenized before subsampling. From this sample a 32-ounce jar shall be provided for sediment chemistry. At the end of the sampling effort for the entire biological unit, the three separate samples are to be composited and homogenized (quartering technique, see USACE EM 200-1-3) into one sample. From this sample, a three-gallon sample shall be provided for biological, chemical and particle size testing. This sample will be labeled EBU-3. The sample analysis parameters are summarized in Table 1.

3d. *Sediment Sampling at EMC-10, EMC-11 and EMC-12 (EBU-4)*. This area is comprised of Eighteenmile Creek Biological Unit – 4 (EBU-4) which is represented by sampling sites EMC-10, EMC-11, and EMC-12 (Figure 1). At each of the sediment sampling sites a total of five plus quarts will be collected. Material from each of the three sites for the biological unit shall be stored in a separate stainless steel pan. The sample material from each location shall be homogenized before subsampling. From this sample a 32-ounce jar shall be provided for sediment chemistry. At the end of the sampling effort for the entire biological unit, the three separate samples are to be composited and homogenized (quartering technique, see USACE EM 200-1-3) into one sample. From this sample, a three-gallon sample shall be provided for biological, chemical and particle size testing. This sample will be labeled EBU-4. The sample analysis parameters are summarized in Table 1.

3e. *Sediment Sampling at EMC-13, EMC-14 and EMC-15 (EBU-5)*. This area is comprised of Eighteenmile Creek Biological Unit – 5 (EBU-5) which is represented by sampling sites EMC-13, EMC-14, and EMC-15 (Figure 1). At each of the sediment sampling sites a total of five plus quarts will be collected. Material from each of the three sites for the biological unit shall be stored in a separate stainless steel pan. The sample material from each location shall be homogenized before subsampling. From this sample a 32-ounce jar shall be provided for sediment chemistry. At the end of the sampling effort for the entire biological unit, the three separate samples are to be composited and homogenized (quartering technique, see USACE EM 200-1-3) into one sample. From this sample, a three-gallon sample shall be provided for biological, chemical and particle size testing. This sample will be labeled EBU-5. The sample analysis parameters are summarized in Table 1.

4. *Bulk Particle Size Analyses*. Particle size and hydrometer analysis will be performed only on the 5 biological unit samples (EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5) according to ASTM Procedure D422.

5. *Bulk Chemical Analyses*. The following bulk chemical analyses will be performed on each of the 15 discrete sediment samples (EMC-1, EMC-2, EMC-3, EMC-4, EMC-5, EMC-6, EMC-7, EMC-8, EMC-9, EMC-10, EMC-11, EMC-12, EMC-13, EMC-14, and EMC-15).

The biological unit (EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5) sediment samples will also have all of these analyses performed on them with the exception of Dioxin. All samples shall be analyzed first without dilutions. All concentrations shall be reported on a dry weight basis. The project required analyte reporting limits are provided below.

Description	Method	Reporting Limits, Sediment (**dry weight – mg/kg**)
Metals per TAL	6010B	0.050
Pesticides	8081A	0.010
PCBs, Ind. Congeners – Canadian	8082	0.010
Dioxin	8290	0.000002
Total Organic Carbon (TOC)	9060	500

6. *Quality Assurance (QA) Samples*. From Site EMC-4, a sample duplicate shall be taken for QA purposes and analyzed for PCBs, Individual Congeners – Canadian List.

7. *Sediment Bioaccumulation Testing:* The five Eighteenmile Creek biological unit sediment samples (EBU-1, EBU-2, EBU-3, EBU-4, and EBU-5) shall be subjected to the 28-day bioaccumulation test using *Lumbriculus variegatus* as prescribed in the USEPA/U.S. Army Corps of Engineers 1998 *Great Lakes Dredged Material Testing and Evaluation Manual* (or up-to-date revision). Five replicates shall be run on each sediment sample and the worm tissues shall be analyzed for metals per TAL, PCBs (individual congeners-Canadian list), and pesticides. All test conditions specified in the *Great Lakes Dredged Material Testing and Evaluation Manual*, including but not limited to test acceptability, shall be strictly followed. The test worms must be of general good health with a survival of at least 70%. Enough worms must be used for each replicate at the beginning of testing in order to harvest adequate tissue mass at the termination of the exposure to obtain the required detection limits and for moisture and lipid content. A minimum of a gram of worm tissue sample is required for metal analyses. A minimum of a gram of worm tissue sample is required for pesticide analyses. A minimum of one gram of worm tissue sample is required for PCB analyses. Any remaining worm tissue/mass shall be applied against the pesticide, PCB, or metal worm tissue analyses for achieving lower reporting limits. This decision will be made by Buffalo and WES personnel when the bulk sediment data are available. The lipid concentration and moisture content of an average worm mass shall be determined before testing. Concentrations for tissues shall be reported on a wet weight basis with the appropriate detection limits specified below.

Description	Method	Reporting Limits, Tissue (**wet weight – mg/kg**)
Metals per (TAL)	6020/6010B	**0.025**

PCBs, Summation of Ind. Congeners	8082	**0.025**
Pesticides	8081a	**0.025**
Lipid	Van Handel (1985) infrared procedure	**1 ug**

8. *Scheduling and Reporting*. Sediment sampling will proceed the week of August 25. The project manager for this work is Anthony Friona, 716-879-4215, FAX 716-879-4355, e-mail - Anthony.M.Friona@usace.army.mil. The technical POC for the project is David Melfi, 716-879-4349, e-mail - David.A.Melfi@usace.army.mil. WES will be furnished with sampling effort information and maps for the report. A draft final report containing a summary of the sampling effort, map(s) of the sediment sampling sites, methods of analyses, all testing results, test data summary tables, and quality assurance data is due within twelve (12) weeks of sample receipt. The report is to consist of two volumes. Volume I is to contain project information and a summary of the sampling effort, sampling maps, field notes test methods, and summary tables of the test results. Volume II is to contain chemistry and biological summary tables, maps, and actual laboratory reports. Once the draft final report is approved, one unbound master copy, an EXCEL e-copy of the summary data tables, and one electronic version (pdf) shall be submitted to Mr. Melfi.

TABLE 1

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**

EIGHTEENMILE CREEK
2003 TESTING
Containers

	Sediment Chemistry	Composite Chemistry & Biological
EMC-1	32-oz Glass	
EMC-2	32-oz Glass	
EMC-3	32-oz Glass	
EBU-1		3-gallons Plastic
EMC-4	32-oz Glass	
EMC-4 QA	8-oz Glass	
EMC-5	32-oz Glass	
EMC-6	32-oz Glass	3-gallons Plastic
EBU-2		
EMC-7	32-oz Glass	
EMC-8	32-oz Glass	
EMC-9	32-oz Glass	
EBU-3		3-gallons Plastic
EMC-10	32-oz Glass	
EMC-11	32-oz Glass	
EMC-12	32-oz Glass	
EBU-4		3-gallons Plastic
EMC-13	32-oz Glass	
EMC-14	32-oz Glass	
EMC-15	32-oz Glass	
EBU-5		3-gallons Plastic
Totals	15 32-oz Glass 1 8-oz Glass	5 3-gallons Plastic

Eighteenmile Creek Sample Location Coordinates

	Latitude	Longitude
EMC-1	43° 20.303'	78° 43.110'
EMC-2	43° 20.234'	78° 42.995'
EMC-3	43° 20.149'	78° 42.929'
EMC-4	43° 20.043'	78° 42.978'
EMC-5	43° 19.937'	78° 42.963'
EMC-6	43° 19.831'	78° 42.928'
EMC-7	43° 19.726'	78° 42.967'
EMC-8	43° 19.623'	78° 43.019'
EMC-9	43° 19.522'	78° 43.073'
EMC-10	43° 19.441'	78° 43.017'
EMC-11	43° 19.356'	78° 42.965'
EMC-12	43° 19.284'	78° 42.873'
EMC-13	43° 19.187'	78° 42.847'
EMC-14	43° 19.110'	78° 42.946'
EMC-15	43° 19.006'	78° 42.981'

Final Cost Estimate for Sampling 18-mile Creek site (surface samples with bioaccumulation tests)

Description	Quantity	Unit	Unit Cost	Cost
1. Sediment Chemistry and Testing (All 15 sites)				
Metals per (TAL)	15	samples	$ 418	$ 6,270
PCBs, Individual Congeners-Canadian List	15	samples	$ 425	$ 6,375
Pesticides (EPA 8081A)	15	samples	$ 207	$ 3,105
Dioxin (SW-846 Method 8280/8290)	15	samples	$ 1,450	$ 21,750
Total Organic Carbon (EPA 9060)	15	samples	$ 87	$ 1,305
2. Bioaccumulation Analyses (in 5 Biological Units)				
Lumbriculus variegatus 28-day bioaccumulation test	5	tests	$ 2,310	$ 11,550
Metals per (TAL) - Replicates	25	samples	$ 418	$ 10,450
PCBs, Individual Congeners-Canadian List - Replicates	25	samples	$ 425	$ 10,625
Pesticides (EPA 8081A) - Replicates	25	samples	$ 207	$ 5,175
Percent Lipid/Moisture Content (Biological Tissue)	26	samples	$ 70	$ 1,820
3. Biological Unit Chemistry (in 5 Biological Units)				
Particle Size	5	samples	$ 200	$ 1,000
Metals per (TAL)	5	samples	$ 418	$ 2,090
PCBs, Individual Congeners-Canadian List	5	samples	$ 425	$ 2,125
Pesticides (EPA 8081A)	5	samples	$ 207	$ 1,035
Total Organic Carbon (EPA 9060)	5	samples	$ 87	$ 435
4. Quality Assurance Samples				
PCBs, Individual Congeners-Canadian List	1	sample	$ 425	$ 425
5. Report			$ 5,500	$ 5,500
			GRAND TOTAL	**$ 91,035**

Assumptions

15 sample locations
All individual (15) samples analyzed for TAL Metals, Pestcides, PCBs, Total Organic Carbon and Dioxin
All biological unit samples (5) are analyzed for TAL Metals, Pesticides, PCBs, TOC, and Particle Size Distribution
All tissue replicates are analyzed for TAL Metals, PCBs, Pesticides, and Percent Lipid/Moisture Content
PCB, Metals and Pesticide Bioaccumulation tests broken into 5 3-site biological units
5 replicates required for each bioaccumulation test

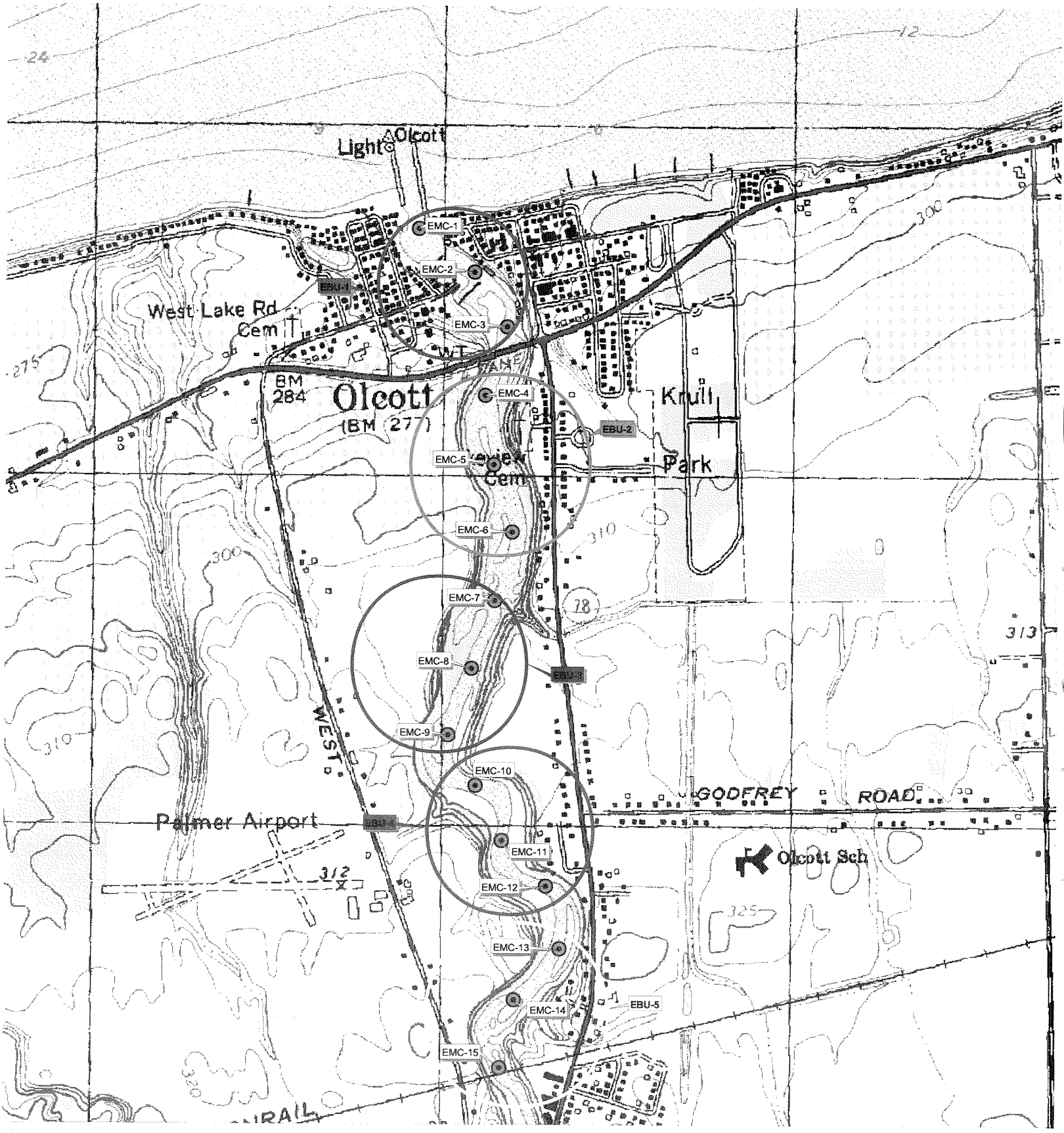


FIGURE 1: Eighteenmile Creek AOC Sampling Locations

APPENDIX J

EIGHTEENMILE CREEK AOC

CHAIN OF CUSTODY & COOLER RECEIPT RECORDS

WES-EE-C
COOLER RECEIPT FORM

ECB Log-in # 114787 - 114867 Date Received: 8/29/03

Project: 18 Mile Creek - Melfi/Karn

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS.

A. PRELIMINARY EXAMINATION PHASE:

Date cooler opened: 8/29/03 by (print) Linda K. Stevenson

(signature) Linda K Stevenson

Did cooler come with a shipping slip (air bill, etc.) ..... (YES) NO

If YES, enter carrier name & air bill number here: 7 Coolers see below

1. Were custody seals on outside of cooler? ..... (YES) NO
   How many & where: 2, front + Back seal date: 8/28/03 seal name: Deborah Freeman
2. Were custody seals unbroken and intact at the date and time of arrival? ..... (YES) NO
3. Were custody papers sealed in a plastic bag & taped inside to the lid? ..... (YES) NO
4. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
5. Did you sign custody papers in the appropriate place? ..... (YES) NO
6. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO
7. If required, was enough ice used? (Type of ice: Cubed) (Temperature: 4c-15c) .. YES (NO)
8. Have designated person initial here to acknowledge receipt of cooler: LKS (date) 8/29/03

B. LOG-IN PHASE:

Date samples were logged-in: 8/29/03 by (print) Linda K Stevenson

(signature) Linda K Stevenson

9. Describe type of packing in cooler: Bubble Wrap
10. Were all bottles sealed in separate plastic bags? ..... (YES) NO
11. Did all bottles arrive unbroken & were labels in good condition? ..... (YES) NO
12. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? ..... (YES) NO
13. Did all bottle labels agree with custody papers? ..... (YES) NO
14. Were correct containers used for the tests indicated? ..... (YES) NO
15. Were correct preservatives added to samples? ..... (YES) NO
16. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
17. Were bubbles absent in Volatile samples? If NO, list by Project ID #: N/A YES (NO)
18. Was the project manager called and status discussed? If YES, give details on the back of this form .... YES (NO)
19. Who was called? _____ By whom? _____ (Date) _____

8287 3894 5615
" " 5626
5637
5648
5659
5660
5670

FedEx Express **USA Airbill**

FedEx Tracking Number: 8287 3894 5615

Form I.D. No. 0215 — Recipient's Copy

From This portion can be removed for Recipient's records.

Date 8/28/03 FedEx Tracking Number 828738945615

Sender's Name DAVID MELFI Phone 716 879-4349

Company US ARMY CORPS OF ENGINEERS

Address 1776 NIAGARA ST Dept/Floor/Suite/Room

City BUFFALO State NY ZIP 14207

Your Internal Billing Reference

To

Recipient's Name LINDA STEVENSON Phone (601) 634-3625

Company USACE ERDC

Address 3909 HALLS FERRY ROAD
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept/Floor/Suite/Room

City VICKSBURG State MS ZIP 39180-6199

8287 3894 5615

0181579218

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

AUG 29 2003

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: _____ * Declared value limit $500

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment *Bill to:* — Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Obtain Recip. Acct. No.
- [ ] Cash/Check

Total Packages	Total Weight	Total Charges
1	60 LBS	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

SRS•Rev. Date 12/00•Part #155918S•©1994–2000 FedEx•PRINTED IN U.S.A.

406

FedEx Express **USA Airbill**

FedEx Tracking Number: 8287 3894 5626

Form I.D. No. 0215 — Recipient's Copy

From This portion can be removed for Recipient's records.

Date: 8/28/03 — FedEx Tracking Number: 828738945626

Sender's Name: DAVID MELFI — Phone: 716 879-4349

Company: US ARMY CORPS OF ENGINEERS

Address: 1776 NIAGARA ST — Dept./Floor/Suite/Room

City: BUFFALO — State: NY — ZIP: 14207

Your Internal Billing Reference

To

Recipient's Name: LINDA STEVENSON, E.P.C — Phone: 601 634-3625

Company: % USACE - ERDC

Address: 3909 HALLS FERRY ROAD — To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City: VICKSBURG — State: MS — ZIP: 39180-6199

8287 3894 5626

0181579218

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations

AUG 29 2003

- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] **NEW** FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: _____

5 Packaging — * Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.

- [ ] **SATURDAY Delivery** — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] **SUNDAY Delivery** — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] **HOLD Weekday at FedEx Location** — Not available with FedEx First Overnight
- [ ] **HOLD Saturday at FedEx Location** — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment — *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Obtain Recip. Acct. No.
- [ ] Cash/Check

Total Packages	Total Weight	Total Charges
1	600 LBS	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature — *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

SRS•Rev. Date 12/00•Part #165918S•©1994–2000 FedEx•PRINTED IN U.S.A.

406

FedEx Express® USA Airbill

FedEx Tracking Number 8287 3894 5637

Form I.D. No. 0215

From This portion can be removed for Recipient's records.

Date 8/29/03 FedEx Tracking Number 828738945637

Sender's Name DAVID MELFI Phone 716 879-4349

Company US ARMY CORPS OF ENGINEERS

Address 1776 NIAGARA ST Dept/Floor/Suite/Room

AUG 29 2003

City BUFFALO State NY ZIP 14207

Your Internal Billing Reference

To

Recipient's Name LINDA STEVENSON Phone 601 634-3625

Company USACE ERDC

Address 3909 HALLS FERRY RD
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept/Floor/Suite/Room

City VICKSBURG State MS ZIP 39180-6199

8287 3894 5637

0161579218

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business morning delivery for select locations

FedEx Envelope rate not available. Minimum charges One-pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day

For Confirmation:

5 Packaging

- [ ] FedEx Envelope*

6 Special Handling

SATURDAY Delivery
- [ ] Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Available only for FedEx Overnight to select ZIP c

Does this shipment c
One box must be check
- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx

7 Payment Bill to: Enter FedEx Ac

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] C

Total Packages: 1 Total Weight: 60L

†Our liability is limited to $100 unless you declare

8 Release Signature Sign to aut

By signing you authorize us to deliver this shi
and agree to indemnify and hold us harm

Questions? Visit our W
or call 1-800-Go-FedEx (800)463-

SRS•Rev Date 12/00•Part #155918S•©199

FedEx Express **USA Airbill**

FedEx Tracking Number: 8287 3894 5648

Form I.D. No. 0215

Recipient's Copy

AUG 2 9 2003

From This portion can be removed for Recipient's records.

Date 8/23/03 FedEx Tracking Number 828738945648

Sender's Name DAVID MELFI Phone 716 879-4345

Company US ARMY CORPS OF ENGINEERS

Address 1776 NIAGARA ST Dept./Floor/Suite/Room

City BUFFALO State NY ZIP 14207

Your Internal Billing Reference

To

Recipient's Name LINDA STEVENSON Phone 601 634-3625

Company USACE ERDC

Address 3909 HALLS FERRY ROAD Dept./Floor/Suite/Room

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City VICKSBURG State MS ZIP 39180-6199

8287 3894 5648

0181579218

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: * Declared value limit $500

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recip. Acct. No.

Total Packages	Total Weight	Total Charges
1	60LBS	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

406

FedEx Express **USA Airbill**

FedEx Tracking Number: 8287 3894 5659

Form I.D. No. 0215

Recipient's Copy

From This portion can be removed for Recipient's records.

Date 8/28/03 FedEx Tracking Number 828738945659

Sender's Name DAVID MELFI Phone 716 879-4349

Company US ARMY CORPS OF ENGINEERS

Address 1776 NIAGARA ST

AUG 29 2003

Dept./Floor/Suite/Room

City BUFFALO State NY ZIP 14207

Your Internal Billing Reference

To

Recipient's Name LINDA STEVENSON Phone 601 634-3625

Company USACE ERDC

Address 3909 HALLS FERRY ROAD

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City VICKSBURG State MS ZIP 39180-6199

8287 3894 5659

0181579218

4a Express Package Service

Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] **NEW** FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service

Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: _____

5 Packaging

* Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

Include FedEx address in Section 3.

- [ ] **SATURDAY Delivery** — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] **SUNDAY Delivery** — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] **HOLD Weekday at FedEx Location** — Not available with FedEx First Overnight
- [ ] **HOLD Saturday at FedEx Location** — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recip. Acct. No.

Total Packages	Total Weight	Total Charges
1	60LBS	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

SRS•Rev. Date 12/00•Part #155118S•©1994–2000 FedEx•PRINTED IN U.S.A.

406

FedEx Express® USA Airbill

FedEx Tracking Number 8287 3894 5660

Form I.D. No. 0215 Recipient's Copy

From This portion can be removed for Recipient's records.

Date 8/28/03 FedEx Tracking Number 828738945660

Sender's Name DAVID MELFI Phone 716 879-4349

Company US ARMY CORPS OF ENGINEERS

Address 1776 NIAGARA ST

Dept./Floor/Suite/Room

City BUFFALO State NY ZIP 14207

AUG 29 2003

Your Internal Billing Reference

To Recipient's Name DA STEVENSON Phone (601) 634-3625

Company SACE ERDC

Address 3909 HALLS FERRY ROAD

FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City VICKSBURG State MS ZIP 39180-6199

8287 3894 5660

0121579218

4a Express Package Service

Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service

Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

5 Packaging

* Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Obtain Recip. Acct. No.
- [ ] Cash/Check

Total Packages	Total Weight	Total Charges
1	60LBS	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

SRS•Rev. Date 12/00•Part #155918S•©1994–2000 FedEx•PRINTED IN U.S.A.

406

FedEx Express — USA Airbill

FedEx Tracking Number: 8287 3894 5670

Form I.D. No. 0215

Recipient's Copy

Please print and press hard. Label moved for Recipient's records.

FedEx Tracking Number: 828738945670

From

Phone 716 879-4349

Company USACE CORPS OF ENGINEERS

Address 1776 NIAGARA ST

Dept/Floor/Suite/Room

City BUFFALO State NY ZIP 14207

Your Internal Billing Reference

To

Recipient's Name LINDA STEVENSON Phone 601 634-3625

Company USACE ERDC

Address 3909 HALLS FERRY ROAD

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept/Floor/Suite/Room

City VICKSBURG State MS ZIP 39180-6199

AUG 29 2003

8287 3894 5670

0181579218

4a Express Package Service

Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day
- [ ] NEW FedEx Extra Hours — Later drop-off with next business afternoon delivery for select locations

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service

Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

* Declared value limit $500

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery — Available only for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Obtain Recip. Acct. No.
- [ ] Cash/Check

[redacted]

Total Packages	Total Weight	Total Charges
1	60LBS	

Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® (800)463-3339.

SRS•Rev Date 12/00•Part #155918S•©1994–2000 FedEx•PRINTED IN U.S.A.

406

#1

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry 32 oz	Dioxin 8 oz	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EMC-13	1-32oz/1-8oz		8/27/03			X	X		
	EMC-8	1-32oz/1-8oz		8/27/03			X	X		
	EMC-3	1-32oz					X			
	EMC-4	1-32oz/1-8oz					X	X		
	EMC-12	1-32oz/1-8oz					X	X		
	EMC-10	1-32oz					X			
	EMC-9	1-8oz						X		
	EMC-6	1-32oz/1-8oz					X	X		
	EMC-7	1-8oz						X		
	EMC-11	1-32oz/1-8oz					X	X		

Relinquished by	Date	Received by	Date	Subtotal Number of Containers:
~~DEBORAH FREEMAN~~ Jay M Miller	~~8/27/2003~~ 1700 hrs	Linda K Stevenson	8/29/03	Preservatives for above requested parameters: A. Cold C. B. D.
Signature	8/28/03	Signature		Methods for above requested parameters:
Deborah A. Freeman	Time	Linda K Stevenson	Time	Shipment Method:
Printed Name		Printed Name	1115	Airbill No.:
USACE		ERDC - WES		
Company		Company		
Relinquished by	Date	Received by	Date	
Signature		Signature		
Printed Name	Time	Printed Name	Time	USACE Location
Company		Company		

#4

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry 32oz	Dioxin 8oz	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	[redacted]									
	EBU-2	1-1gal		8/27/03					X	
	EBU-2	1-2gal		8/27/03					X	

Subtotal Number of Containers:

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Relinquished by	Date	Received by	Date	Time
DEBORAH A. FREEMAN ~~Jay M Miller~~	~~8/27/2003~~ 1700 hrs 8/28/03	Linda K Stevenson	8/29/03	1115
Signature		Signature		
Deborah A. Freeman		Linda K. Stevenson		
Printed Name		Printed Name		
USACE		ERDC-WES		
Company		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature		
Printed Name		Printed Name		
Company		Company		

Shipment Method:
Airbill No.:

USACE Location

#5

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry	Dioxin	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBU-3	1-1gal	1	8/27/03					X	
	EBU-3	1-2gal	1	8/27/03					X	

Relinquished by: ~~Jay M. Miller~~ Scott J. Lozier
Signature
Printed Name: USACE
Company
Date: 8/28/03 ~~8/27/2003~~
Time: 1700 hrs

Received by: Linda K Stevenson
Signature
Printed Name: Linda K Stevenson
Company: ERDC-WES
Date: 8/29/03
Time: 1115

Subtotal Number of Containers:

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Shipment Method:
Airbill No.:

USACE Location

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

#6

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry (32 oz)	Dioxin (8 oz)	Biological Composite	QA (8 oz)	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EMC-1	1-32oz/1-8oz		8/27/03			X	X			
	EMC-15	" "					X	X			
	EMC-9	1-32oz					X				
	EMC-10	1-8oz						X			
	EMC-12	1-32oz/1-8oz					X	X			
	EMC-14	" "					X	X			
	EMC-3	1-8oz.						X			
	EMC-7	1-32oz					X				
	EMC-5	1-32oz/1-8oz					X	X			
	EMC-4 QA	1-8oz								X	

Relinquished by	Date	Received by	Date	Subtotal Number of Containers:
DEBORAH A. FREEMAN ~~Jay M Miller~~	~~8/27/2003~~ 1700 hrs 8/28/03	Linda K Stevenson	8/29/03	
Signature: Deborah A. Freeman	Time	Signature: Linda K Stevenson	Time: 1115	
Printed Name: USACE		Printed Name: ERDC_WES		
Company		Company		
Relinquished by	Date	Received by	Date	
Signature	Time	Signature	Time	
Printed Name		Printed Name		
Company		Company		

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Shipment Method:
Airbill No.:

USACE Location

#3

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry	Dioxin	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~								
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~								
	EBU-5	1-1gal	1	8/27/03					X	
	EBU-5	1-2gal	1	8/27/03					X	

Relinquished by: ~~Jay M Miller~~ Scott J. Lingston
Signature:
Printed Name: USACE
Company:
Date: ~~8/27/2003~~ 8/28/03
Time: 1700 hrs

Received by: Linda K Stevenson
Signature:
Printed Name: Linda K Stevenson
Company: ERDC-WES
Date: 8/28/03
Time: 1115

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

Subtotal Number of Containers:

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Shipment Method:
Airbill No.:

USACE Location

#7

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry 3202	Dioxin 8082	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBU-1	1-1gal		8/27/03					X	
	EBU-1	1-2gal		8/27/03					X	

Relinquished by: DEBORAH A. FREEMAN ~~Jay M. Miller~~
Signature: Deborah A Freeman
Printed Name: USACE
Company:
Date: ~~8/27/2003~~ 1700 hrs 8/28/03
Time:

Received by: Linda K Stevenson
Signature: Linda K Stevenson
Printed Name: ERDC-WES
Company:
Date: 8/29/03
Time: 1115

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

Subtotal Number of Containers:

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Shipment Method:
Airbill No.:

USACE Location

#2

US Army Corps of Engineers
Buffalo District

Chain of Custody Record

COC No.:

Page 1 of 1 Date: 8/27/2003

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-4349
Project Manager: David Melfi (LRB)
Project Name: Eighteenmile Creek AOC
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)Dennis Rimer

Laboratory Name:
USACE ERDC
Address: 3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Phone: 601 634-3625
Contact: Linda Stevenson EP-C

Laboratory No.	Field Sample #	Container Type	Number	Date	Time	Matrix	Requested Parameters: Chemistry	Dioxin	Biological Composite	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBU-4	1-1gal		8/27/03					X	
	EBU-4	1-2gal		8/27/03					X	

Subtotal Number of Containers:

Preservatives for above requested parameters:
A. Cold C.
B. D.

Methods for above requested parameters:

Shipment Method:
Airbill No.:

USACE Location

Relinquished by	Date	Received by	Date	Time
DEBORAH A. FREEMAN ~~Jay M.Miller~~	~~8/27/2003~~ 1700 hrs 8/28/03	Linda K Stevenson	8/29/03	1115
Signature: Deborah A. Freeman		Signature: Linda K Stevenson		
Printed Name: USACE		Printed Name: ERDC-WES		
Company		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature		
Printed Name		Printed Name		
Company		Company		

APPENDIX K

EIGHTEENMILE CREEK AOC

RESEARCH ADDRESSING ANTIMONY RECOVERIES

Published in Environmental Science & Technology, May 1991, pp. 985-986, by the American Chemical Society.

Comment on "Acid Digestion for Sediments, Sludges, Soils, and Solid Wastes. A Proposed Alternative to EPA SW 846 Method 3050"

SIR: Recently Kimbrough and Wakakuwa pointed out that the EPA SW 846 method 3050 fails to reproducibly recover Sb from soil or sludge samples (*1*). Despite these findings and the obvious implications, the EPA has approved a microwave oven digestion using nitric acid for the extraction of Sb from soils in preparation for analysis by flame atomic absorption (FAA), graphite furnace atomic absorption (GFAA), or inductively coupled plasma (ICP). The statement of work for this new EPA procedure (Document No. ILM01.0) uses nitric acid in a sealed Teflon vessel with microwave heating for metal dissolution. Antimony is one of 22 metals listed in the scope and application. Thus, it is reasonable to assume that laboratories will be expected to routinely recover pollutant Sb from soil with this digestion. This correspondence offers further explanation of the failure of nitric acid to dissolve Sb in the presence of silicates, based on our observations with microwave oven heated digestions.

Although we are pleased that the EPA has accepted a closed vessel microwave digestion for the Contract Laboratory Program (CLP), we must caution users with regard to this specific digestion procedure when attempting to extract Sb from potentially contaminated geological materials. Microwave heated acid dissolutions offer numerous advantages over conventional hot-plate digestions (*2–7*), but the use of only HNO_3 for the dissolution of Sb from soils results in losses of this metal. For two geological materials, a standard soil from the Rocky Mountain Arsenal (RMA), and a National Institute of Standards and Technology (NIST) standard reference river sediment (SRM-2704), we found that a microwave–HNO_3 digestion similar to the one in the EPA's Statement of Work failed to recover Sb for GFAA analysis (*7*). Thus, laboratories using a microwave–HNO_3 digestion would report false negatives when assessing Sb concentrations in soils.

Antimony was not detected by GFAA in our microwave–HNO_3 digests of the NIST SRM-2704 reference material, the RMA soil, or the RMA soil spiked with approximately 40 μg of Sb(III)/g. Losses exceeding 70% occurred when 40 μg of Sb(III)/g was spiked into the RMA digest slurries (10 mL of HNO_3 and 0.5 g of soil) between two consecutive microwave dissolution heating programs. However, quantitative recoveries were obtained when Sb(III) was spiked into 10 mL of HNO_3 (no soil) and then taken through the microwave–HNO_3 digestion procedure. Additionally, the Sb(III) standard added to a RMA filtered digest after the microwave–HNO_3 treatment was also quantitatively recovered. Thus, "loss" of Sb (or failure to recover Sb) occurs when Sb(III) is digested with HNO_3 in the presence of soil or sediment.

These findings are consistent with other studies (*8–10*) reporting large losses of Sb due to oxidation and subsequent adsorption. Using a radioactive tracer technique, two of the above studies (*8, 9*) found ^{122}Sb and ^{124}Sb carrier on glass surfaces of the digestion vessel or on filters when it was not recovered in the extract. Bajo and Suter (*8*) suggested that when Sb(III) is heated in the presence of only HNO_3 and $HClO_4$ the antimonic acid could be oxidized to Sb(V), perhaps existing as Sb_2O_5, and that this oxide was readily adsorbed by glass surfaces. More recently, Berry and Brett (*11*) have shown that when elemental Sb is treated with concentrated HNO_3 a mixture of Sb_2O_3 and $Sb_4O_4(OH)_2(NO_3)_2$ is formed. The latter decomposes to the trioxide when heated above 135 °C. As the trioxide, Sb is insoluble in water, dilute HNO_3, or dilute H_2SO_4, but soluble in HCl. From the trioxide the pentoxide can be formed in the presence of oxygen at high pressures and temperatures (*12*). Consequently, we speculate that Sb_2O_5 is formed during the microwave–HNO_3 digestion of soils and is removed by adsorption onto reactive silicate surfaces.

The formation of adsorptive antimony oxides has been prevented for the digestion of organic matter by adding H_2SO_4 to a wet ashing mixture of HNO_3 and $HClO_4$ prior to digestion (*8*). Additionally, quantitative Sb recoveries from geological reference materials have been achieved when a HCl/HNO_3 acid mixture is used for digestion (*1, 13*). Using a 50/50 ratio of HCl/HNO_3, we were able to recover the majority of the Sb present in the NIST SRM-2704 with our microwave digestion procedure. The average recovery of 2.92 μg/g (15% RSD, $n = 3$) is 77% of the accepted value (3.79 μg/g) for this reference material. However, this acid dissolution mixture exceeded the pressure limits of all three of the Teflon vessels containing the NIST reference material, an indication that the microwave program used in the HNO_3 digestion is not suitable for digestions using both HNO_3 and HCl. Reducing the HCl concentration in the digestion mixture to 20% did not eliminate overpressurization (two of the three vessels vented) and lowered the recovery of Sb to approximately 60% (average 2.28 μg/g, 6.1% RSD), further indicating the need to use a less rigorous heating program with HNO_3/HCl acid mixtures.

The use of HCl during digestion shows promise for the recovery of Sb, most likely because in the presence of this acid Sb(V) forms the $SbCl_6^-$ anion, which does not adsorb on undigested siliceous materials. However, closed-vessel microwave digestions of soils with acid mixtures containing HCl require further refinement, before routine application. Because of overpressurization, the high HCl concentration required for good recoveries cannot be used with 100 psi PFA Teflon vessels without changing the microwave heating program that was used for the HNO_3 digestions. Currently available double-walled 200 psi vessels (*14*) may eliminate this problem. Other possible solutions include (1) allowing the HNO_3/HCl and soil mixture to react for 10–15 min before capping, (2) using a two-step microwave digestion in which HCl is added to a previously digested HNO_3 solution, (3) lowering the microwave power settings and/or decreasing the digestion time, or (4) using other acid mixtures that have been proven to recover Sb in silicate materials (i.e., $HCl/HNO_3/HF$/boric acid) (*15*). In conclusion we feel, as did Kimbrough and Wakakuwa (*1*), that Sb should not be included with pollutant metals that can be readily recovered from soil with a nitric acid digestion.

Literature Cited

(1) Kimbrough, D. E.; Wakakuwa, J. R. *Environ. Sci. Technol.* **1989**, *23*, 898–900.
(2) Abu-Samra, A.; Morris, J. S.; Koirtyohann, S. R. *Anal. Chem.* **1975**, *47*, 1475–1477.
(3) Barret, P.; Davidowski, L. J., Jr.; Penaro, K. W.; Copeland, T. R. *Anal. Chem.* **1978**, *50*, 1021–1023.
(4) Kingston, H. M., Jassie, L. B., Eds. Introduction to Microwave Sample Preparation: Theory and Practice; American Chemical Society: Washington, DC, 1988.
(5) Matthes, S. A.; Farrell, R. F.; Mackie, A. J. Journal of Technical Progress Report, U.S. Bureau of Mines, 1983; *No. 120.*
(6) Nadkarni, R. A. *Anal. Chem.* **1984**, *56*, 2233–2237.
(7) Hewitt, A. D.; Reynolds, C. M. CRREL SR 90-19, Cold Regions Research and Engineering Laboratory, 72 Lyme Rd., Hanover, NH 03755, 1990.
(8) Bajo, S.; Suter, U. *Anal. Chem.* **1982**, *54*, 49–51.
(9) Gallorini, M.; Greenberg, R. R.; Gills, T. B. *Anal. Chem.* **1978**, *50*, 1479–1481.
(10) Merry, R. H.; Zarcinas, B. A. *Analyst* **1980**, *105*, 558–563.
(11) Berry, F. J.; Brett, M. E. *Inorg. Chim. Acta* **1984**, *83*, 167–169.
(12) Cotton, F. A.; Wilkinson, G. *Advanced Inorganic Chemistry*, 5th ed.; Whiley-Interscience: New York, 1988; p 401.
(13) Matthes, S. A. U.S. Department of the Interior, Bureau of Mines, Albany, OR, personal communication.
(14) Tatro, M. E. *Spectroscopy (Eugene, Oreg.)* **1990**, *5*, 17–20.
(15) Matthes, S. A. Bureau of Mines Report of Investigations 8484, 1980.

Alan D. Hewitt,* James H. Cragin

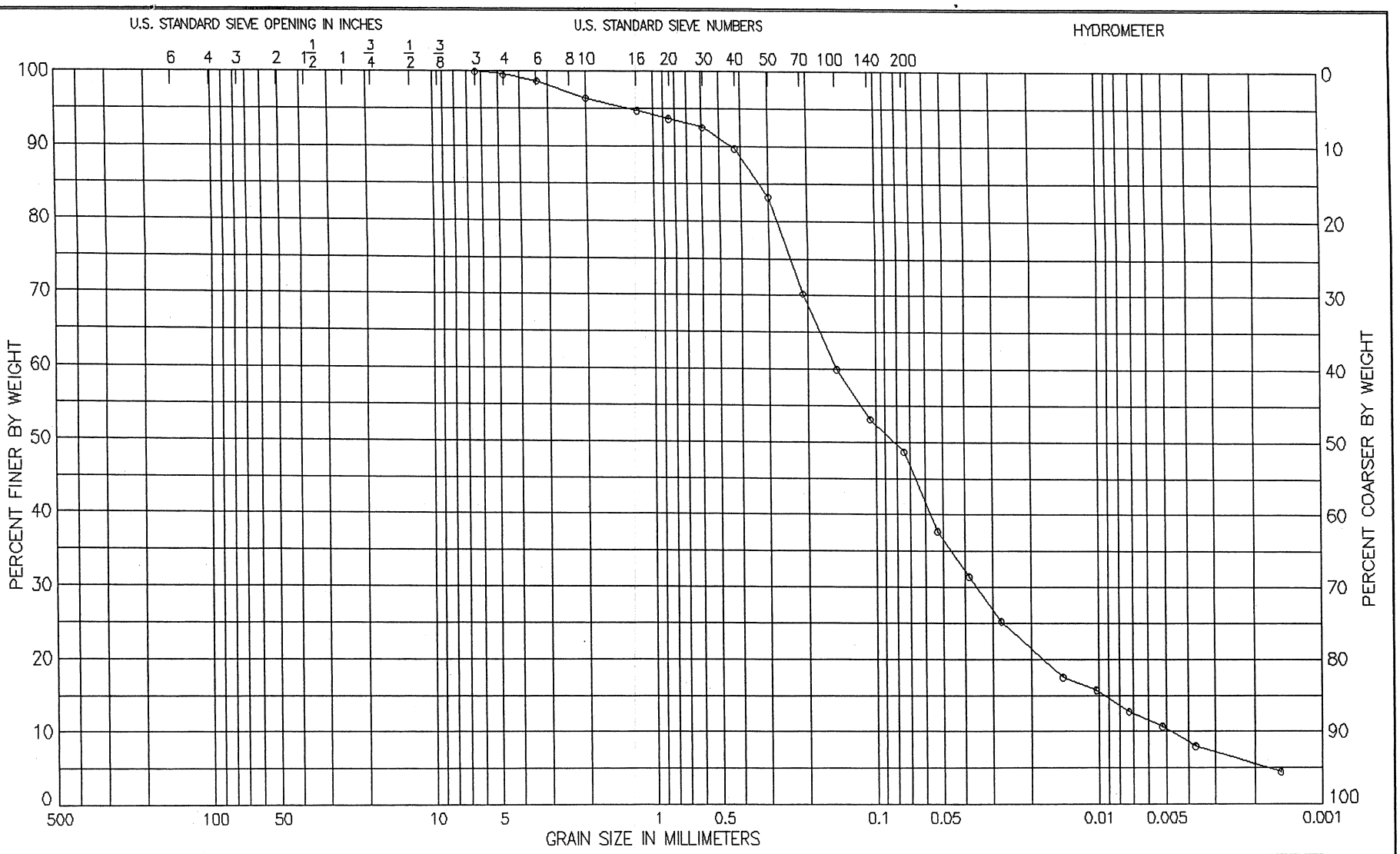
Cold Regions Research and Engineering Laboratory
Hanover, New Hampshire 03755-1290

Funding for this work was provided by the Program Manager, Rocky Mountain Arsenal, through the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) under contract DA-2522-IAR-1689, Durant Graves, Project Monitor. We especially thank Steve A. Matthes of the Bureau of Mines (Albany, OR), who provided helpful advice and suggestions throughout this study. We also thank Dr. Clarence Grant and Dr. Thomas Jenkins of USACRREL, who reviewed the manuscript.

APPENDIX L

EIGHTEENMILE CREEK AOC

PARTICLE SIZING DATA PACKAGE



LL	PL	PI	GS 2.67 EST	NAT W,%	ORG,%

CLASSIFICATION
SILTY SAND (SM), GRAY VISUAL

GRADATION CURVE | LABORATORY USAE WES – STF/GL

PROJECT 18 MILE CREEK
KARN/STEVENSON
BORING NO. EBU1 COMP SAMPLE NO. 114787
DEPTH/ELEV DATE 18 SEP 03

SIEVE ANALYSIS

PROJECT: 18 MILE CREEK
KARN/STEVENSON

BORING: EBU1 COMP SAMPLE: 114787 DF: MD2703 .DAT
DEPTH: DATE: 18 SEP 03

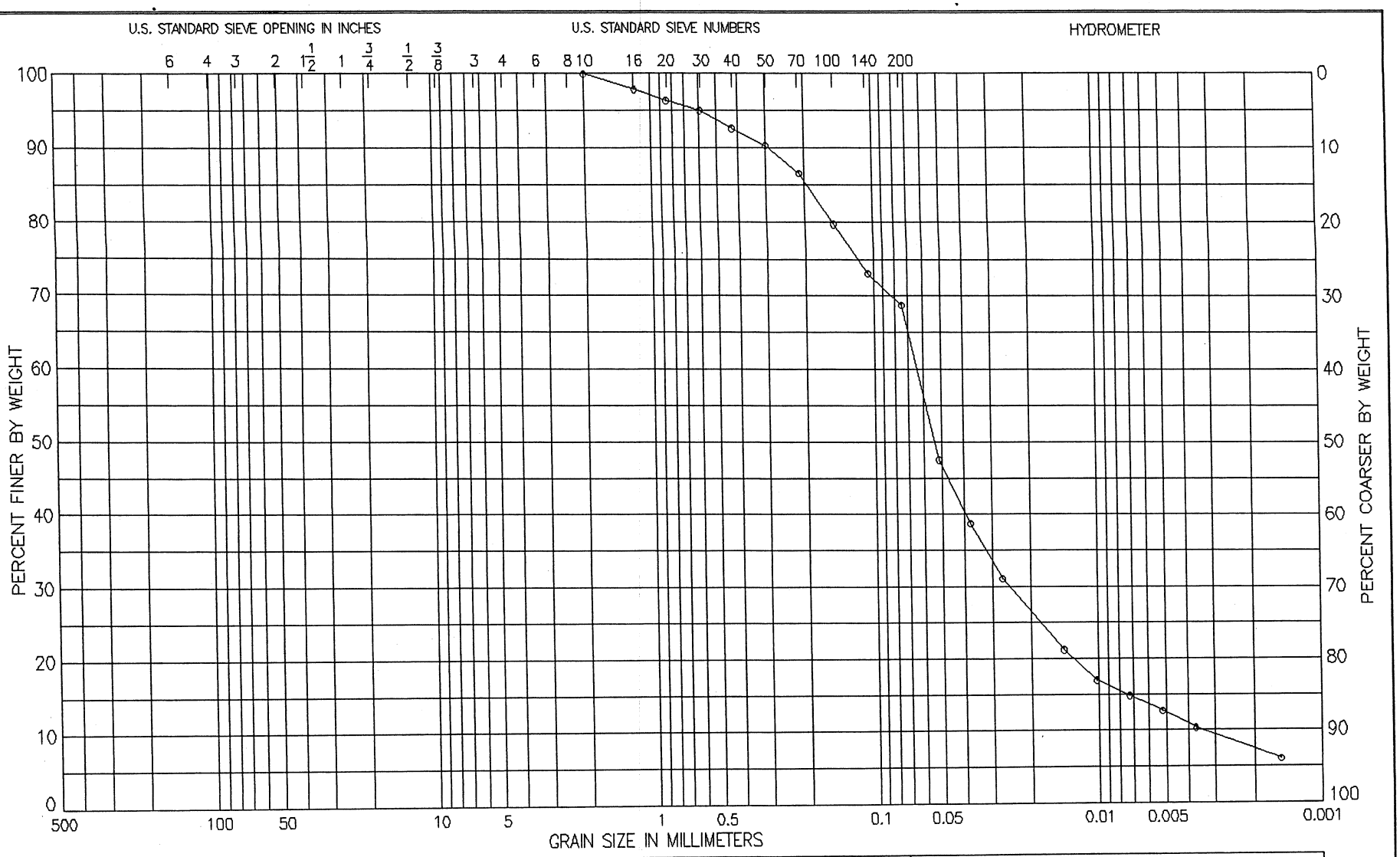
NO-LIMITS-RAN GS: 2.67 est WC: .00
CLASSIFICATION: 108
SILTY SAND (SM), GRAY VISUAL

TOTAL WEIGHT OF SAMPLE: 146.5 gms.
PARTIAL WEIGHT AFTER SPLIT: 51.9 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	No 3	6.350	100.0	.0
.6	No 4	4.750	99.6	.4
1.2	No 6	3.350	98.8	1.2
3.4	No 10	2.000	96.5	3.5
.9	No 16	1.180	94.8	5.2
1.5	No 20	.850	93.7	6.3
2.1	No 30	.600	92.5	7.5
3.6	No 40	.425	89.8	10.2
7.1	No 50	.300	83.3	16.7
14.1	No 70	.212	70.2	29.8
19.6	No 100	.150	60.0	40.0
23.3	No 140	.106	53.1	46.9
25.7	No 200	.075	48.7	51.3
HYDROMETER:				
RDGS	TEMP			
12.3	24.5	.0532	37.7	62.3
10.2	24.5	.0383	31.5	68.5
8.1	24.5	.0276	25.3	74.7
5.5	24.5	.0145	17.5	82.5
4.9	24.5	.0103	15.7	84.3
3.9	24.5	.0074	12.8	87.2
3.2	24.5	.0052	10.7	89.3
2.3	24.5	.0037	8.0	92.0
1.3	23.5	.0015	4.5	95.5

PERCENT GRAVEL = .4
PERCENT SAND = 50.9
PERCENT FINES = 48.7

EDE



LL	PL	PI	GS 2.67 EST	NAT W,%	ORG,%

CLASSIFICATION
SANDY SILT (ML), GRAY VISUAL

PROJECT 18 MILE CREEK
KARN/STEVENSON
BORING NO. EBU2 COMP SAMPLE NO. 114788
DEPTH/ELEV DATE 18 SEP 03

GRADATION CURVE | LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: 18 MILE CREEK
KARN/STEVENSON

BORING: EBU2 COMP SAMPLE: 114788 DF: MD2703 .DAT
DEPTH: DATE: 18 SEP 03

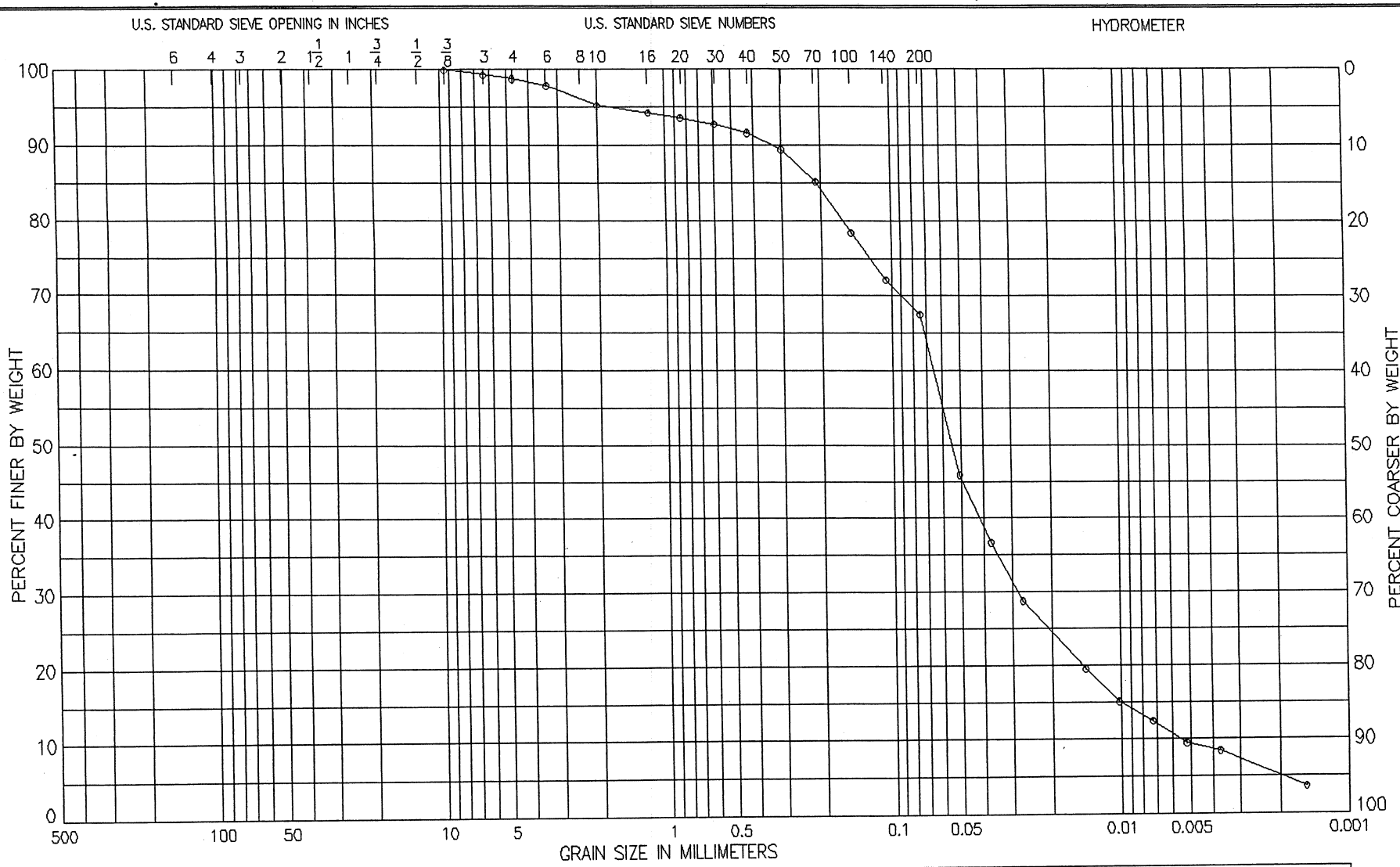
NO-LIMITS-RAN GS: 2.67 est WC: .00
CLASSIFICATION: 126
SANDY SILT (ML), GRAY VISUAL

TOTAL WEIGHT OF SAMPLE: .0 gms.
PARTIAL WEIGHT AFTER SPLIT: 52.8 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	No 10	2.000	100.0	.0
1.1	No 16	1.180	97.9	2.1
1.9	No 20	.850	96.4	3.6
2.6	No 30	.600	95.1	4.9
3.9	No 40	.425	92.6	7.4
5.1	No 50	.300	90.3	9.7
7.1	No 70	.212	86.6	13.4
10.7	No 100	.150	79.7	20.3
14.2	No 140	.106	73.1	26.9
16.5	No 200	.075	68.8	31.3
HYDROMETER:				
RDGS	TEMP			
15.3	24.5	.0518	47.5	52.5
12.4	24.5	.0376	38.8	61.2
9.9	24.5	.0272	31.2	68.8
6.6	24.5	.0144	21.2	78.8
5.2	24.5	.0103	17.0	83.0
4.5	24.5	.0073	14.8	85.2
3.8	24.5	.0052	12.7	87.3
3.0	24.5	.0037	10.3	89.7
1.8	23.5	.0015	6.1	93.9

PERCENT GRAVEL = .0
PERCENT SAND = 31.3
PERCENT FINES = 68.8

EDE



LL	PL	PI	GS 2.67 EST	NAT W,%	ORG,%

CLASSIFICATION
SANDY SILT (ML), GRAY VISUAL

PROJECT 18 MILE CREEK
KARN/STEVENSON
BORING NO. EBU3 COMP SAMPLE NO. 114789
DEPTH/ELEV DATE 18 SEP 03

GRADATION CURVE | LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: 18 MILE CREEK
KARN/STEVENSON

BORING: EBU3 COMP SAMPLE: 114789 DF: MD2703 .DAT
DEPTH: DATE: 18 SEP 03

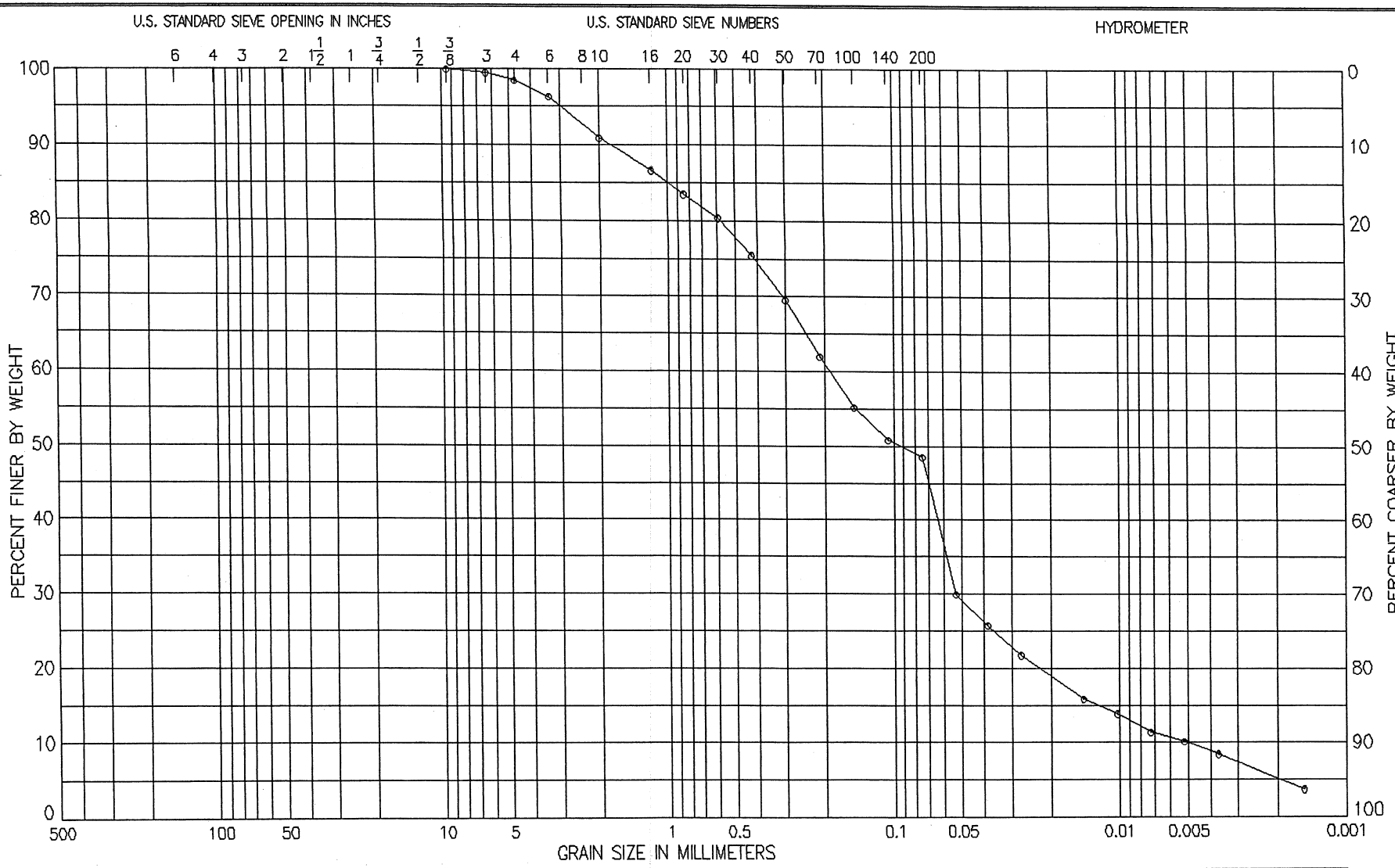
NO-LIMITS-RAN GS: 2.67 est WC: .00
CLASSIFICATION: 142
SANDY SILT (ML), GRAY VISUAL

TOTAL WEIGHT OF SAMPLE: 152.1 gms.
PARTIAL WEIGHT AFTER SPLIT: 57.7 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	3/8 in	9.500	100.0	.0
1.0	No 3	6.350	99.3	.7
.8	No 4	4.750	98.8	1.2
1.4	No 6	3.350	97.9	2.1
4.0	No 10	2.000	95.3	4.7
.6	No 16	1.180	94.3	5.7
1.0	No 20	.850	93.6	6.4
1.5	No 30	.600	92.8	7.2
2.2	No 40	.425	91.6	8.4
3.5	No 50	.300	89.5	10.5
6.1	No 70	.212	85.2	14.8
10.2	No 100	.150	78.4	21.6
14.0	No 140	.106	72.2	27.8
16.8	No 200	.075	67.5	32.5
HYDROMETER:				
RDGS	TEMP			
17.0	24.5	.0510	45.9	54.1
13.5	24.5	.0372	36.7	63.3
10.5	24.5	.0270	28.8	71.2
7.0	24.5	.0144	19.5	80.5
5.3	24.5	.0103	15.0	85.0
4.3	24.5	.0073	12.4	87.6
3.2	24.5	.0052	9.5	90.5
2.8	24.5	.0037	8.4	91.6
1.2	23.5	.0015	3.7	96.3

PERCENT GRAVEL = 1.2
PERCENT SAND = 31.3
PERCENT FINES = 67.5

EDE



COBBLES	GRAVEL		SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

LL	PL	PI	GS	NAT W,%	ORG,%
			2.67 EST		

CLASSIFICATION
SILTY SAND (SM), GRAY VISUAL

PROJECT 18 MILE CREEK
KARN/STEVENSON

BORING NO. EBU4 COMP SAMPLE NO. 114790

DEPTH/ELEV DATE 18 SEP 03

GRADATION CURVE

LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: 18 MILE CREEK
KARN/STEVENSON

BORING: EBU4 COMP SAMPLE: 114790 DF: MD2703 .DAT
DEPTH: DATE: 18 SEP 03

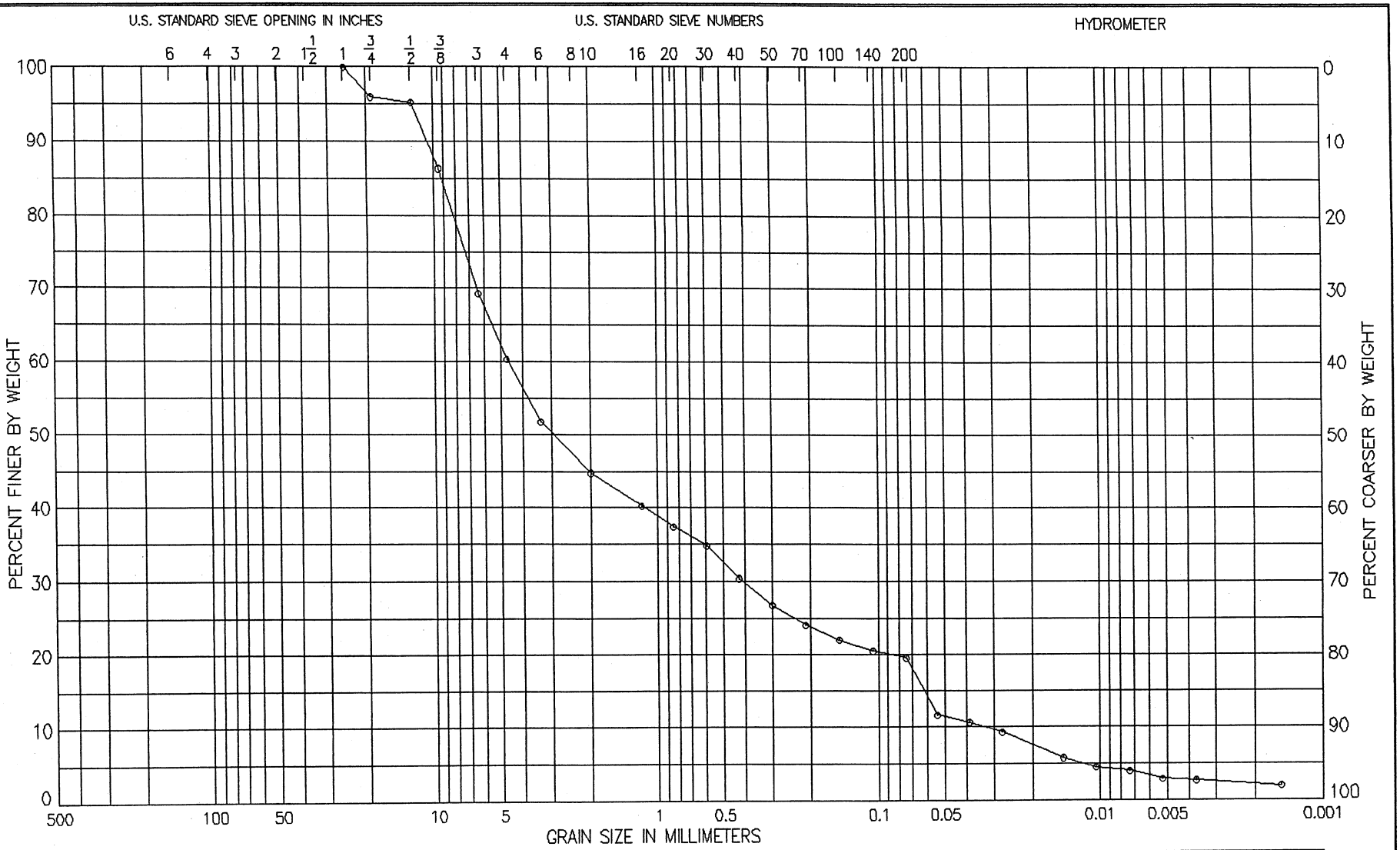
NO-LIMITS-RAN GS: 2.67 est WC: .00
CLASSIFICATION: 160
SILTY SAND (SM), GRAY VISUAL

TOTAL WEIGHT OF SAMPLE: 135.7 gms.
PARTIAL WEIGHT AFTER SPLIT: 58.8 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	3/8 in	9.500	100.0	.0
.6	No 3	6.350	99.6	.4
1.4	No 4	4.750	98.5	1.5
3.0	No 6	3.350	96.3	3.7
7.3	No 10	2.000	90.9	9.1
2.8	No 16	1.180	86.6	13.4
4.8	No 20	.850	83.5	16.5
6.8	No 30	.600	80.4	19.6
10.0	No 40	.425	75.5	24.5
13.8	No 50	.300	69.6	30.4
18.7	No 70	.212	62.0	38.0
23.1	No 100	.150	55.2	44.8
25.9	No 140	.106	50.9	49.1
27.4	No 200	.075	48.6	51.4
HYDROMETER:				
RDGS	TEMP			
11.7	24.5	.0535	29.9	70.1
10.0	24.5	.0384	25.7	74.3
8.4	24.5	.0275	21.8	78.2
6.0	24.5	.0145	15.8	84.2
5.2	24.5	.0103	13.8	86.2
4.2	24.5	.0073	11.4	88.6
3.7	24.5	.0052	10.1	89.9
3.0	24.5	.0037	8.4	91.6
1.3	23.5	.0015	3.7	96.3

PERCENT GRAVEL = 1.5
PERCENT SAND = 50.0
PERCENT FINES = 48.6

EDE



LL	PL	PI	GS 2.67 EST	NAT W,%	ORG,%

CLASSIFICATION
GRAVELLY SILTY SAND (SM), GRAY VISUAL

PROJECT 18 MILE CREEK
KARN/STEVENSON
BORING NO. EBU COMP SAMPLE NO. 114791
DEPTH/ELEV DATE 18 SEP 03

GRADATION CURVE | LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: 18 MILE CREEK
KARN/STEVENSON

BORING: EBU COMP SAMPLE: 114791 DF: MD2703 .DAT
DEPTH: DATE: 18 SEP 03

NO-LIMITS-RAN GS: 2.67 est WC: .00
CLASSIFICATION: 178
GRAVELLY SILTY SAND (SM), GRAY VISUAL

TOTAL WEIGHT OF SAMPLE: 226.4 gms.
PARTIAL WEIGHT AFTER SPLIT: 58.5 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	1 in	25.000	100.0	.0
9.0	3/4 in	19.100	96.0	4.0
1.8	1/2 in	12.500	95.2	4.8
20.1	3/8 in	9.500	86.4	13.6
38.5	No 3	6.350	69.3	30.7
20.3	No 4	4.750	60.4	39.6
19.4	No 6	3.350	51.8	48.2
15.9	No 10	2.000	44.8	55.2
5.9	No 16	1.180	40.3	59.7
9.6	No 20	.850	37.4	62.6
13.0	No 30	.600	34.8	65.2
18.8	No 40	.425	30.4	69.6
23.5	No 50	.300	26.8	73.2
27.0	No 70	.212	24.1	75.9
29.7	No 100	.150	22.0	78.0
31.7	No 140	.106	20.5	79.5
33.0	No 200	.075	19.5	80.5
HYDROMETER:				
RDGS	TEMP			
9.2	24.0	.0546	11.6	88.4
8.4	24.0	.0389	10.6	89.4
7.3	24.0	.0277	9.3	90.7
4.5	24.0	.0146	5.9	94.1
3.4	24.0	.0104	4.5	95.5
3.0	24.0	.0074	4.0	96.0
2.1	24.0	.0053	2.9	97.1
1.9	24.0	.0037	2.7	97.3
1.4	23.5	.0015	2.0	98.0

PERCENT GRAVEL = 39.6
PERCENT SAND = 40.9
PERCENT FINES = 19.5

EDE

APPENDIX M

EIGHTEENMILE CREEK AOC

SAMPLING SITES

FIGURES 1-3

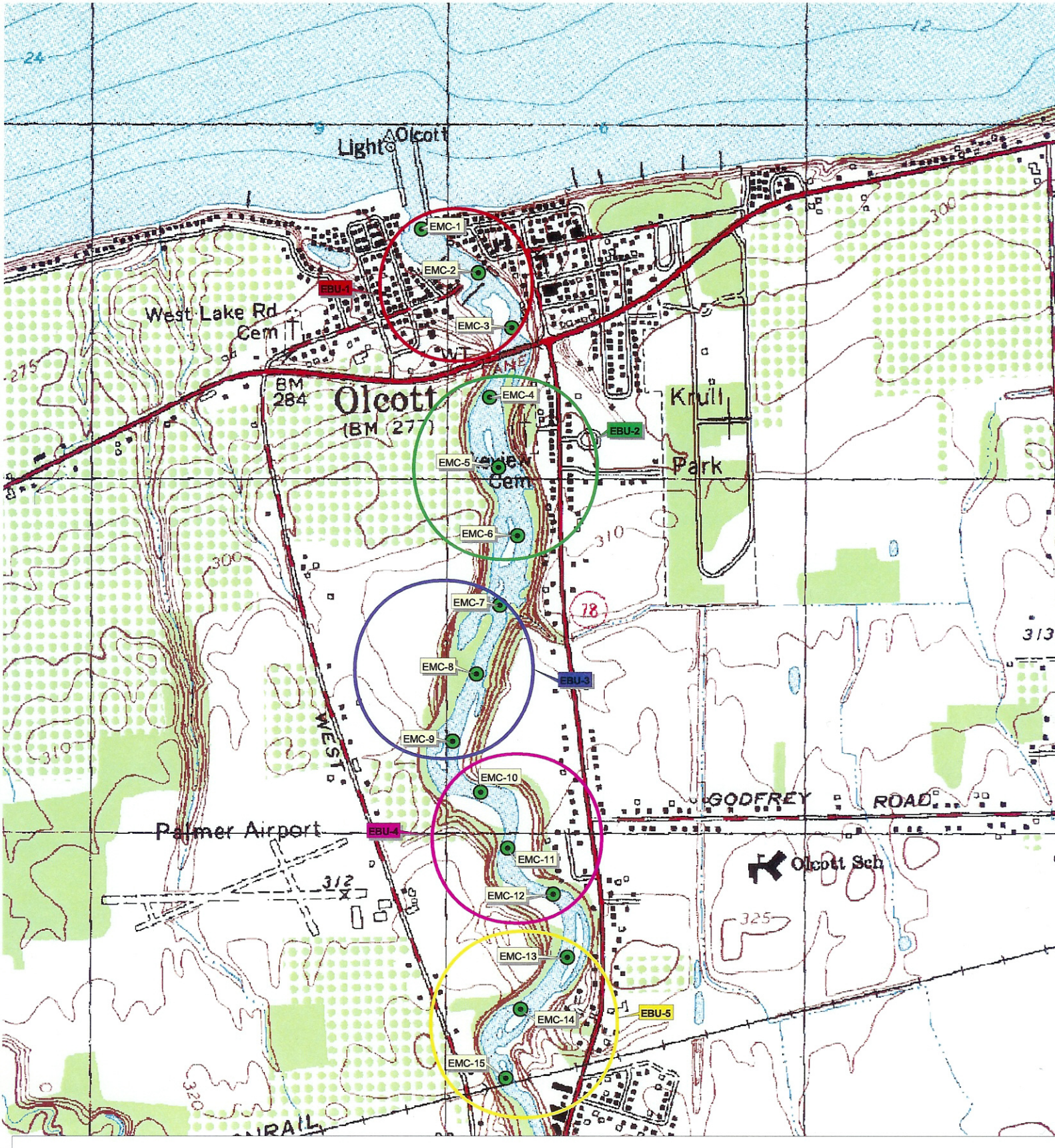
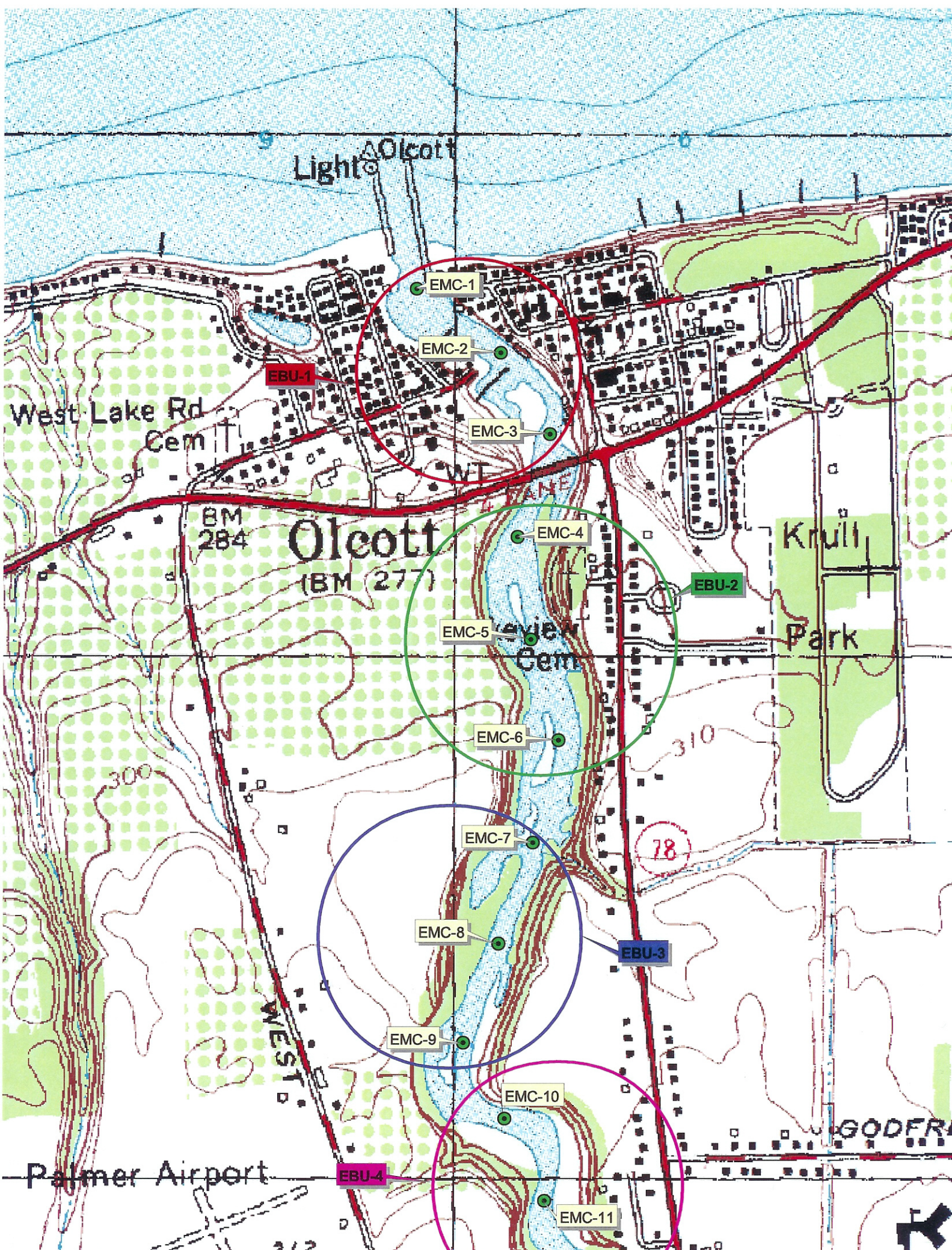
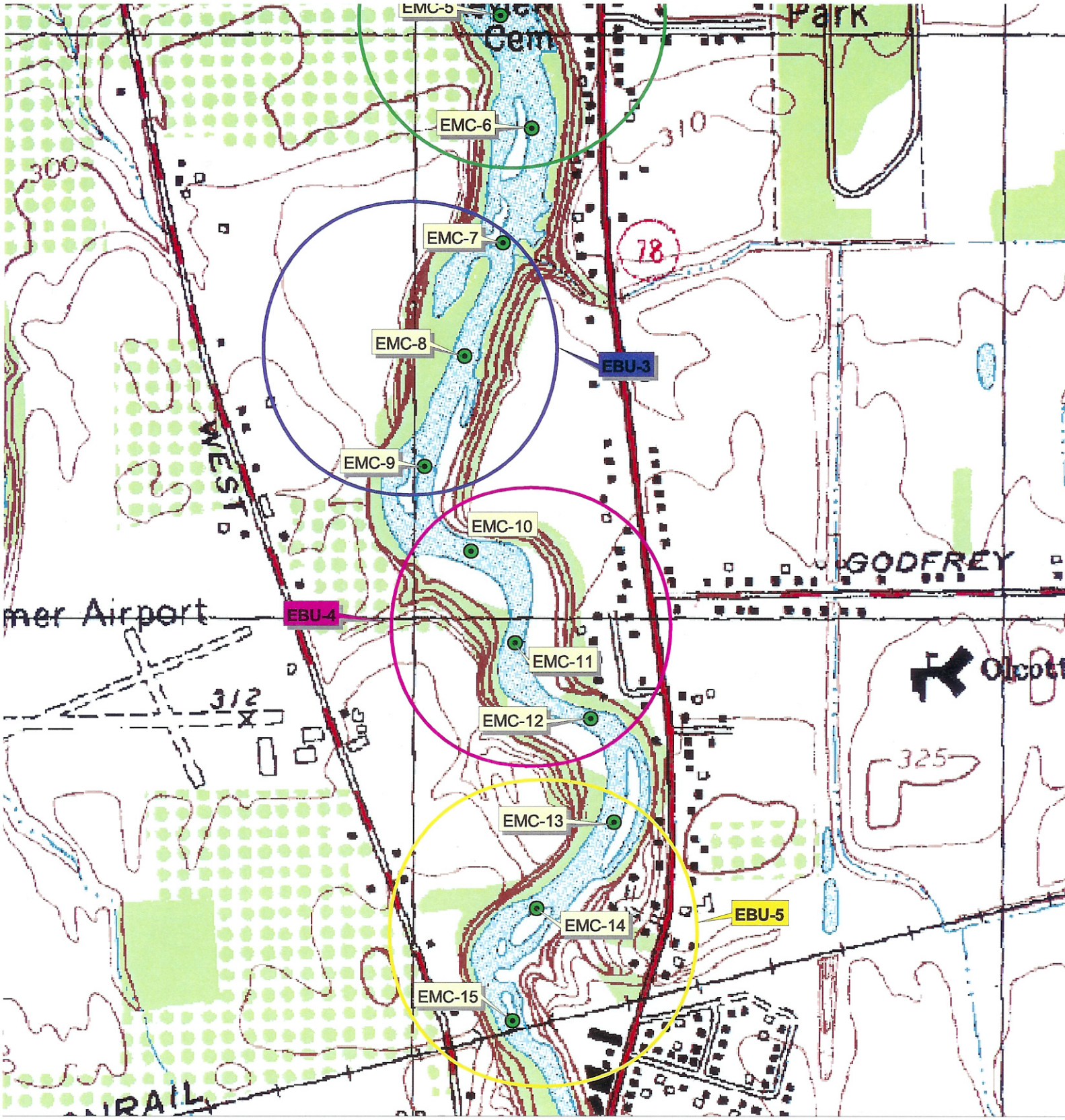


FIGURE 1: Eighteenmile Creek AOC Sampling Locations


Olcott
Light
EMC-1
EMC-2
EBU-1
West Lake Rd
Cem
EMC-3
BM
284
Olcott
(BM 277)
EMC-4
EBU-2
Knull
EMC-5
Park
Cem
EMC-6
310
300
EMC-7
78
EMC-8
EBU-3
WEST
EMC-9
EMC-10
Palmer Airport
EBU-4
EMC-11



RE 1: Eighteenmile Creek AOC Sampling

APPENDIX N

EIGHTEENMILE CREEK AOC

FIELD LOGS

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-1

Weather: CLEAR SKY / BREEZY / 72°

Date: 8/27/03 **Time:** 10:55 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 14' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 21

Latitude: N43° 20.302 **Longitude:** W78° 43.107

Sediment Sample Description:

Number of Grabs: 3 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK BROWN **Composite Time:** EBU-1 11:20 AM

Characteristics: SILT + SAND

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

TOOK 3 GRABS; ORGANIC MATERIAL & ZEBRA MUSSELS

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-2

Weather: BLUE SKY / BREEZY / 73°

Date: 8/26/03 **Time:** 11:08 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 8 **Site Water Temperature:** 74°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 23

Latitude: N43° 20.235 **Longitude:** W78° 42.999

Sediment Sample Description:

Number of Grabs: ~~2~~ **Sampling Equipment Used:** PETERSON GRAB

Color: DARK ~~BROWN~~ GREY TO BLACK **Composite Time:** 11:20 AM EBU-1

Characteristics: SILT

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

LOTS OF ZEBRA MUSSELS FIRST GRAB;
2ND GRAB SILT + SLIGHT ORGANIC (STICKS)
CONTENT

Sample Photo ID #(s): _____

US Army Corps of Engineers®
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-3

Weather: BLUE SKY / BREEZY / 73°

Date: 8/26/03 **Time:** 11:15 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 10' **Site Water Temperature:** 74°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 24

Latitude: N43° 20.147 **Longitude:** W78° 42.931

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GR

Color: DARK GREY TO BLACK **Composite Time:** 11:20 AM (EBU-1)

Characteristics: SILT + ORGANICS.

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

_____

_____

_____

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-4

Weather: BLUE SKY

Date: 8/27/03 **Time:** 11:25AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 8' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 25

Latitude: N43° 20.042 **Longitude:** W78° 42.976

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK GREY TO BLACK **Composite Time:** 11:37 AM (EBU-2)

Characteristics: SILT + ORGANICS

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

EMC-4 QA PCB ~~FA~~ SAMPLE TAKEN AT THIS SITE

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-5

Weather: BLUE SKY

Date: 8/27/05 **Time:** 11:30 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 13' **Site Water Temperature:** 76

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 27

Latitude: N43° 19.937 **Longitude:** W78° 42.950

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK ~~GREY/BLACK~~ BROWN **Composite Time:** 11:37 AM (EBM-2)

Characteristics: MOSTLY ORGANIC + SILT

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

_____

_____

_____

Sample Photo ID #(s): _____

US Army Corps of Engineers®
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-6

Weather: BLUE SKY.

Date: 8/27/03 **Time:** 11:35 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 12' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 28

Latitude: N43° 19.829 **Longitude:** W78° ~~82~~ 4 2.922

Corrected as per David Melfi: 3/3/04

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK BROWN-BLACK **Composite Time:** 11:37 AM (EBU-2)

Characteristics: ORGANIC + SILT, PLUS SAND + SMALL GRAVEL

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

_____

_____

_____

Sample Photo ID #(s): _____

US Army Corps of Engineers®
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-7

Weather: BLUE SKY / 75° / SLIGHT BREEZE.

Date: 8/27/03 **Time:** 11:40 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 11' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 29

Latitude: N43° 19.723 **Longitude:** W78° 42.976

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB.

Color: BROWN **Composite Time:** 11:55 AM (EBU-3)

Characteristics: SILT + ORGANIC

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

VEGETATION IN GRAB; PULLED OUT LARGE FRESHWATER CLAM SHELL (DEAD).

Sample Photo ID #(s): _____

US Army Corps of Engineers®
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-8

Weather: BLUE SKY / SLIGHT BREEZE / 75°

Date: 8/27/03 **Time:** 11:45 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 12' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 30

Latitude: N43° 19.621 **Longitude:** W78° 43.027

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: BLACK **Composite Time:** 11:55 AM (EBU-3)

Characteristics: ORGANICS + SILT

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

PETROLEUM ~~OR~~ ODOR

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-9

Weather: BLUE SKY / SLIGHT BREEZE / 75°

Date: 8/27/03 **Time:** 11:50 AM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 51 **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 31

Latitude: N43° 19.517 **Longitude:** W78° 43.080

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: BLACK **Composite Time:** 11:55 AM (EBL-3)

Characteristics: ORGANICS + SILT + SAND + SM. GRAVEL

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

_____

_____

_____

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-10

Weather: BLUE SKY / BREEZY / 75°

Date: 8/27/03 **Time:** 12:00 PM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 7' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 32

Latitude: N43° ~~19.442~~ 19.442 **Longitude:** W 78° ~~43.017~~ 43.017

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB.

Color: DARK BROWN TO BLACK **Composite Time:** ~~12:00 PM~~ (EBU-4) 12:15 PM

Characteristics: ORGANIC + SAND + SILT.

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

CHANGE SAMPLING LOCATION (SLIGHTLY WEST) DUE TO HIGH ROCK CONTENT.

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-11

Weather: BLUE SKY / BREEZY / 75°

Date: 8/27/03 **Time:** 12:05 **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 8' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 33

Latitude: N43° 19.351 **Longitude:** W78° 42.973

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK BROWN **Composite Time:** 12:15 PM (EBU-4)

Characteristics: ORGANIC + SILT + SAND + SM. GRAVEL

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

SMALL BIVALVE SHELLS

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-12

Weather: BLUE SKY / BREEZY / 75°.

Date: 8/27/03 **Time:** 12:12PM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 10' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 34

Latitude: N43° 19.282 **Longitude:** W78° 42.872

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB.

Color: BLACK **Composite Time:** 12:15PM (EBM-4)

Characteristics: ORGANICS + SAND + SILT.

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-13

Weather: BLUE SKY / SLIGHTLY BREEZY / 75°

Date: 8/27/03 **Time:** 12:20PM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 6' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 35

Latitude: N43° 19.191 **Longitude:** W78° 42.853

Sediment Sample Description:

Number of Grabs: 1|1|1 **Sampling Equipment Used:** PETERSON GRAB

Color: BROWN **Composite Time:** 1:00 PM (EBK-5)

Characteristics: ORGANICS + SILT + GRAVE

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

1ST GRAB — LOG; 2ND AQUATIC VEG; SHIFTED

Sample Photo ID #(s): _____

US Army Corps of Engineers
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-14

Weather: BLUE SKY / SLIGHTLY BREEZY / 75°

Date: 8/27/03 **Time:** 12:40PM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 5' **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 37

Latitude: N43° 19.089 **Longitude:** W78° 43.005

Sediment Sample Description:

Number of Grabs: 2 **Sampling Equipment Used:** PETERSON

Color: BROWN **Composite Time:** 1:00PM (EBU-5)

Characteristics: SAND + GRAVEL (SM TO MED SIZE)

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

LOTS OF AQUATIC VEGETATION (VALESNARIA, MYRIOPHYLLUM); MOVED UPSTREAM AFTER 4-5 GRABS BOTTOM VERY COBBLY; NOT MUCH MATRIX IN SAMPLE

Sample Photo ID #(s): _____

US Army Corps of Engineers®
Buffalo District

SAMPLE LOG

Project Area: Eighteenmile Creek, Olcott, NY

Sampling Site ID: EMC-15

Weather: BLUE SKY / SLIGHTLY BREEZY / 75°

Date: 8/27/03 **Time:** 12:45PM **Samplers' Initials:** JM, DR, SL, DF

Site Water Depth: 31 **Site Water Temperature:** 76°

Sampling Crew: James Miller, Dennis Rimer, Scott Livingston, Deborah Freeman

Site Coordinates:

Waypoint: 38

Latitude: N43° 19.012 **Longitude:** W78° 42.996

Sediment Sample Description:

Number of Grabs: 1 **Sampling Equipment Used:** PETERSON GRAB

Color: DARK BROWN. **Composite Time:** 1:00 PM (EBU-5)

Characteristics: ORGANICS + SILT + ROCKS.

Benthic Macroinvertebrates:

Collected: yes (no) **Number of Grabs:** _____

Sampling Equipment Used: _____

Comments:

93' D/S OF ORIG PT — TOO SHALLOW

N50 NORTH OF RR TRESSEL

SCOTT & HAND SAMPLED BOTTOM

Sample Photo ID #(s): _____