FOCUSED FEASIBILITY STUDY REPORT
FOR
40TH AVENUE PROJECT AREA
IN THE ST. LOUIS RIVER AREA OF CONCERN

August 28, 2015

APPENDIX G. SEDIMENT CHEMISTRY, BIOASSAY, TISSUE BIOACCUMULATION, AND BENTHIC COMMUNITY ASSESSMENT REPORT

Sediment Chemistry, Bioassay, Tissue Bioaccumulation, and Benthic Community Assessment Report

40th Avenue West, Duluth, MN

Jewell Associates Engineers, Inc.
560 Sunrise Drive
Spring Green, WI 53588

Prepared for:
Jewell Associates Engineers, Inc. and United States Fish and Wildlife Service

Prepared by:
Stantec Consulting Services Inc.
1165 Scheuring Road
De Pere, WI 54115

July 31, 2015
Project No.: 193702726

Design with community in mind

Table of Contents

1.0 INTRODUCTION 1

2.0 METHODOLOGY 3
2.1 PHYSICAL HABITAT CHARACTERIZATION 3
2.2 WHOLE SEDIMENT TOXICITY 4
2.3 TISSUE CHEMISTRY ANALYSIS 7
2.4 SEDIMENT CHEMICAL ANALYSIS 10
2.5 MACROINVERTEBRATE COMMUNITY ASSESSMENT 10
2.6 KRIGING 11

3.0 RESULTS 13
3.1 PHYSICAL HABITAT CHARACTERIZATION 13
3.2 SEDIMENT CHEMICAL ANALYSIS 13
3.3 BENTHIC MACROINVERTEBRATE COMMUNITY ASSESSMENT 16
3.4 TISSUE BIOACCUMULATION 17
3.5 WHOLE SEDIMENT TOXICITY 18
3.6 KRIGING 19

4.0 DISCUSSION 20

5.0 STATEMENT OF LIMITATIONS 25

6.0 REFERENCE 26

LIST OF FIGURES

Figure 1 Sediment Sample Locations Overview Map
Figure 2 Ammonia Concentrations
Figure 3 Physical Sediment Analysis Grain Size
Figure 4 Sediment Sample Locations Dioxins and Furans TEQ Results
Figure 5. Sediment Sample Locations Arsenic Results
Figure 6. Sediment Sample Locations Cadmium Results
Figure 7. Sediment Sample Locations Lead Results
Figure 8. Sediment Sample Locations Mercury Results
Figure 9. Sediment Sample Locations Nickel Results
Figure 10. Sediment Sample Locations Percent Moisture Results
Figure 11. Wood Waste Description Map
Figure 12. Sediment Sample Locations PCB Results (Aroclor 1260)
Figure 13. Sediment Sample Locations Total PAHs Results
Figure 14. Phase IV AOC Mean PEC-Q Values
Figure 15. Sediment Sample Locations Mean PEC-Q (Metals and PAH)
Figure 16. Sediment Sample Locations Mean PEC-Q (Metals, PAH, PCB)
Figure 17. Sediment Sample Locations Mean PEC-Q (Metals, PAH, PCB [.5MDL])
Figure 18. Comparison of Macroinvertebrate Abundance (2010 and 2014)
Figure 19. Comparison of Macroinvertebrate Richness (2010 and 2014)

Figure 20. Shannon-Wiener Index by Sample Location
Figure 21a. *Hexagenia* Sample Locations 2010 and 2014 including 2010 Reference Locations
Figure 21b. *Hexagenia* Sample Locations 2010 and 2014 40th Avenue Project Site Only
Figure 22. EPT Index by Sample Location
Figure 23. Abundance by Sample Location
Figure 24. Species Richness by Sample Location
Figure 25. Shannon-Wiener Index by Sample Location
Figure 26. Tissue TEQ (Dioxins and Furans) by Sample Location
Figure 27a-l. Dioxin/Furan Congener Lipid Normalized Tissue Comparisons to Sediment Concentrations
Figure 28. *Chironomus dilutus* 10-day and *Hyallela azteca* 28-day Survivability
Figure 29. *Hyallela azteca* and *Chironomus dilutus* Biomass Toxicity Tests tPAH and TEQ
Figure 30. Total PAH Kriging Level II SQT Thresholds
Figure 31. Total PAH Kriging Level I SQT Thresholds
Figure 32. Dioxins and Furans TEQ Kriging Results (Deviation from SQT II)
Figure 33. Dioxins and Furans TEQ Kriging Results (Deviation from SQT I)
Figure 34. Benthic Kriging Results Combined 2010 and 2014 Data
Figure 35. 2010 Macroinvertebrate Kriging Map
Figure 36. 2014 Macroinvertebrate Kriging Map
Figure 37. Ecological Risk Conceptual Model
Figure 38. Ecological Management Units

LIST OF TABLES

Table 1. Summary of Sampling Protocol
Table 2. Station Coordinates
Table 3. Physical Sediment Analysis: Percent Moisture, Grain Size, and Total Organic Carbon
Table 4. 10-day Whole Sediment Toxicity Test Results *Chironomus dilutus* survival and growth 40th Avenue Project
Table 5. 28-day Whole Sediment Toxicity Test Results *Hyallela azteca* survival and growth 40th Avenue Project
Table 6. Tissue Analyte Results
Table 7. MPCA Level I and Level II Screening Thresholds
Table 8. Macroinvertebrate Community Metrics (2014)
Table 9. Macroinvertebrate Community Metrics (2010)

LIST OF APPENDICES

APPENDIX A SAMPLE ANALYSIS PLAN (SAP)
APPENDIX B BORING REPORTS
APPENDIX C TOXICITY TESTING AND MACROINVERTEBRATE REPORTS
APPENDIX D SEDIMENT AND TISSUE ANALYSTICAL CHEMISTRY VALIDATION REPORTS
APPENDIX E PACE ANALYTICAL LETTERS
APPENDIX F PACE ANALYTICAL CHEMISTRY RESULTS – BULK CHEMISTRY

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this document on behalf of Jewell Associates Engineers, Inc. (Jewell) and the United States Fish and Wildlife Service (USFWS) for the 40th Avenue West Project located within the lower St. Louis Estuary, Duluth, MN.

The Site is located at the confluence of the St. Louis River (SLR) and St. Louis Bay (near the approximate intersections of 40th Avenue West and Oneota Street) Duluth, St. Louis County, Minnesota. The Site lies in an industrial section within the City boundaries and occupies approximately 330 acres in Saint Louis Bay. Based on a water surface elevation of 601.1 feet above mean sea level (msl); depth to sediment at the Site ranges between 3.75 and 30.5 feet below msl. **Figure 1** illustrates the Site location.

The lower twenty-one miles of the St. Louis River form the St. Louis River estuary and this area has been utilized for over 100 years as a commercial and industrial Great Lakes port. The estuary is considered to be a significant source of biological productivity for western Lake Superior, and provides valuable wetland, sand beach, forested, and aquatic habitats for a variety of fish and wildlife communities.

The lower St. Louis River and surrounding watershed were designated an Area of Concern (AOC) in 1987 due to the presence of chemical contaminants, poor water quality, reduced fish and wildlife populations, and habitat loss. GIS-based sediment quality databases have been developed for the St. Louis River Estuary, to assist with the data analysis and assessment of the Estuary for ecological risk and ongoing monitoring. Following recommendations of the St. Louis River System AOC Stage II Remedial Action Plan (1995), the St. Louis River Citizens Action Committee, now the St. Louis River Alliance, completed the *Lower St. Louis River Habitat Plan* in 2002 to facilitate resource management and conservation to sustain biological productivity, native biodiversity, and ecological integrity. The work summarized in this report is to provide an ecological risk assessment to inform remediation and restoration efforts in the Project Area.

The purpose of the remediation-to-restoration process in the St. Louis Estuary is to implement remediation activities to address sediment contamination, as well as other limiting factors, that are in support of the desired ecological goals for each project location. Using information provided in *An Ecological Design for the 40th Avenue West Remediation-to-Restoration Project* (National Resources Research Institute, University of Minnesota Duluth; revised October 2012), four BUIs have been identified for the Site:

- Loss of fish and wildlife habitat;
- Degraded fish and wildlife populations;
- Degradation of benthos; and
- Fish tumors and other deformities

Proposed restoration activities will consist of relocating sediments within the Site to provide deeper channels for fish passage, relocating sediments as areas of fill placement for wildlife habitats, and softening the shoreline adjacent to Oneota Street and Erie Pier.

To document the first steps of the remediation-to-restoration process, *An Ecological Design for the 40th Avenue West Remediation-to-Restoration Project* was completed for the Site. Based on information provided in this report, the Site is considered to currently consist of emergent marsh (considered to be the most diverse of the three aquatic plant communities), floating leaf aquatic bed (the second most diverse, consisting of submerged, and floating-leaf aquatic plants), and submerged aquatic bed (consisting of submerged aquatic plants mixed with occasional free-floating plants) habitat conditions.

Substrate (i.e. sediment) data were also collected during this investigation and broken into thirteen descriptive classes. Sediment types were classified by texture as gauged by field staff. To simplify the descriptive process, these classes were grouped into three broader classes consisting of sand (coarse material and other hard substrates), clay/silt (finer-texture substrates), and muck (fine and coarse organic material).

The Site was further characterized into 4 water depth classes for habitat characterization: shallow (0-0.65 meters (m)); intermediate (0.65-1.65 m); deep (1.65-2.5 m); and a disphotic zone, below which no vegetation occurs. Shallow, intermediate, and deep habitat zones were divided into low energy and high energy locations to assess changes in aerial size to a particular habitat for plant, macro invertebrate, aviary, and/or other ecological response data associated with the Site. Utilizing aquatic plant, substrate, and habitat class based on depth/energy, potential habitat restoration scenarios were proposed for the Site.

In September 2014, sediment samples for biological and chemical characterization were collected at the 40th Avenue St. Louis Estuary study location (**Figure 1**) as part of this project. Stantec performed this sampling effort following USFWS and MPCA approved Sample Analysis Plan (SAP)(Stantec, 2014). The primary objective of work being reported was to collect and evaluate environmental chemistry, aquatic toxicity, bioaccumulation, and benthic community samples in sediment and environmental chemistry samples in near surface water to aid in evaluating the risk and potential toxicity to ecological receptors. Risk and potential toxicity were based on a comparison of sediment contaminant concentrations to MPCA established screening thresholds. Comparison to these thresholds is intended to establish likelihood of environmental pollutants potentially impacting benthic organism toxicity at the Site. Alone, these thresholds are to be used for guidance but not for regulatory or definitive causality with regard to bioavailablity of sediment contaminants to benthic organisms. For areas with additional lines of evidence, these thresholds can be used with the additional lines of evidence (e.g., sediment toxicity tests, bioaccumulation assessments, benthological surveys) to identify the spatial and temporal extent of contamination and the need for remediation to reduce the risk to fish and wildlife resources.

2.0 METHODOLOGY

In 2014, sediment and surface water sampling was conducted at multiple locations within the 40th Avenue study location (**Figure 1**). The sediment sampling locations were selected based on historical data with an understanding of existing concerns, remediation options, and desired ecological endpoints. From the 2014 survey twenty-six (26) in-water and two (2) upland stations were selected for sampling for sediment chemistry with a subset of these locations selected for macroinvertebrate benthic community assessment, bioassay, and tissue testing. One station was selected to serve as an in-site background (reference) location (**Table 1**). The in-site reference area was selected in collaboration with Jewell and USFWS and was from an area where the sediment chemistry was anticipated to have no Minnesota Pollution Control Agency (MPCA) Level I and Level II sediment quality targets (SQTs). This station was 1041 (**Figure 1**). A summary of the physical, chemical and biological sampling methodologies, analyses, and reporting protocols are provided below. Detailed protocols are described in the Standard Operating Procedures (SOPs) presented in the SAP (Stantec 2014) **Appendix A** and summarized within **Table 1**. Station coordinates are provided within **Table 2**. Boring logs are presented in **Appendix B**.

2.1 PHYSICAL HABITAT CHARACTERIZATION

Water quality data and habitat conditions were recorded within each sampling reach. Water quality data including measurements of pH, dissolved oxygen (DO), temperature, specific conductivity, Oxidation Reduction Potential (ORP), and turbidity using a calibrated YSI multiparameter flow-through sonde. Additionally, water samples were collected and analyzed for nitrogen (as ammonia) and sulfides. Collection of these parameters was to assist with determining if wood waste at the project site was affecting overall water quality in the area.

Sediment was collected from the site locations using a stainless steel ponar grab. The color, smell, and visual texture of the sediment were recorded before sediment was removed and dispersed into pre-cleaned bowls for disbursement into sampling jars. Once visual observations were made, sediments were homogenized as appropriate and then transferred to the laboratory provided sample containers. Following sediment collection, sampling equipment that came in contact with surface water or sediments was decontaminated. Sample jars were individually packaged and labeled with date, time, and sample ID before they were shipped under Chain of Custody (COC) to Pace Analytical Laboratories (Pace) for bulk sediment chemistry or Great Lakes Environmental Center (GLEC) Laboratory for whole sediment toxicity tests and macroinvertebrate identifications. Animals exposed to site sediments at the GLEC laboratory were subsequently sent to Pace for tissue testing. Grain size and total organic carbon (TOC) sediment was extracted from the macroinvertebrate samples by GLEC within their laboratory. Additional information pertaining to sampling procedures, decontamination procedures, sample shipment and COC protocols, laboratory sample processing and associated quality control is provided in the SAP (**Appendix A)**.

2.2 WHOLE SEDIMENT TOXICITY

The whole sediment toxicity tests were conducted at GLEC laboratory following GLEC's written SOPs which are based on the procedures outlined in *U.S. EPA Method, EPA/600/R-99/064 Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates, Second Edition and American Society for Testing and Materials (ASTM) 1706-05*, Standard Test Methods for Measuring the Toxicity of Sediment Associated Contaminants with Freshwater Invertebrates (ASTM 2010).

The twenty-one whole sediment samples for toxicity studies were collected by Stantec and delivered under COC control via Fed Ex to GLEC's laboratory. The sediment samples were received at GLEC, where they were assigned a unique GLEC laboratory identification number and stored cold, but not frozen, until test initiation.

The 10-day *Chironomus dilutus* toxicity tests and the 28-day *Hyallela azteca* toxicity tests were initiated on November 4, 2014 for each of the twenty-one sediment samples, with one GLEC laboratory control sediment and one water only control exposure, per test organism.

The twenty-one investigative and laboratory control sediments were used to initiate a 4-day *Lumbriculus variegatus* sediment toxicity screening tests to determine initial survivability. There was no statistically significant reduction ($p \geq 0.05$) in *L. variegatus* survival after 4-days of exposure in the twenty-one investigative samples when compared to the laboratory control sediments. Consequently, the 28-day *L. variegatus* bioaccumulation tests commenced with the twenty-one investigative sediments and one laboratory control sediment. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were started on three different days; October 08, October 22, and November 12, 2014.

Second to third instar *C. dilutus* (10-11 days old at test initiation; provided by an outside supplier: Aquatic Bio Systems) was used to initiate the 10-day whole sediment toxicity tests and water only exposures. Juvenile *H. azteca* (7-8 days old; cultured in house) were used to initiate the 28-day whole sediment toxicity tests and water only exposure. All organisms were randomly placed in test chambers using a large bore pipette. The *C. dilutus* and *H. azteca* were continuously exposed for the duration of the test (10-day and 28-day, respectively) to each of the sediment samples, one laboratory control sediment and one water only exposure.

In the water only exposures, test organisms were exposed to the overlying water with no sediment. There were eight replicate beakers for each sediment sample, the water only exposure, and the GLEC laboratory control sediment; each replicate contained 10 test organisms. The GLEC laboratory control sediment is a reference sediment that is collected from the Boardman River, a local river that has a primarily forested watershed in the Pere Marquette State Forest in Michigan. The *C. dilutus* and *H. azteca* were exposed in 470 mL glass test chambers, each containing 100 milliliters (mL) of whole sediment and 175 mL of overlying water. Prior to adding the whole sediment to each test chamber, the laboratory control sediment as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all-purpose mixer or spoon until a uniform color and texture was achieved.

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was immediately added; and was considered to be test day -1 (November 3, 2014 for the *C. dilutus* tests and for the *H. azteca* tests). Test organisms were randomly added to each replicate test chamber the following day (test day 0), November 4, 2014.

Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample, the laboratory control sediment, and the water only exposure consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 milligrams per liter (mg/L) and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use.

The *C. dilutus* test chambers were fed 1.5 mL of Tetrafin® goldfish food slurry (4 mg/mL dry solids) once daily. The *H. azteca* test chambers were fed 1.0 mL mixture of yeast, trout food, and cerophyl (YTC; ~1800 (1700-1900 +/- 5%) mg/L solids) once daily.

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and the DO concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets (see enclosed compact disc).

If the DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO increased to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended unless the DO values dropped back below 2.5 mg/L, at which time the additional water renewals were re-initiated. There were no instances in the whole sediment toxicity tests of decreased DO and increased overlying water renewals. Should this have happened then reserved sediment would have been used for retesting and mixed to assure oxygen levels would create issues with survivability studies.

Alkalinity, hardness, pH, conductance, and total ammonia (as N) were measured in the overlying water on test days 0 and 10 for the *C. dilutus* tests (Table 10) and on days 0 and 28 for the *H. azteca* tests (**Appendix C**). For the 28-day *H. azteca* whole sediment toxicity tests, conductivity was measured weekly, and pH was measured at least three times per week from two randomly selected test chambers. The alkalinity, hardness, and total ammonia (as N) samples were a composite sample collected from all replicates of a given treatment. All test exposure water quality measurements were recorded on the laboratory bench data sheets (see enclosed compact disc).

Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber and recorded on the laboratory bench data sheets (see enclosed compact disc).

The number of *C. dilutus* surviving in each replicate test chamber was recorded at test termination (10 days), and a summary of the percent survival at test termination is provided in Tables 1 and 2. The average ash free dry weight [AFDW in milligrams (mg)] of the surviving organisms for each *C. dilutus* replicate, and the biomass [AFDW (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination.

The number of surviving *H. azteca* in each replicate chamber was recorded at test termination (28 days) and the survival data are summarized in **Appendix C**. The average dry weight (mg) of the surviving organisms for each *H. azteca* replicate, and the biomass [dry weight (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination, **Appendix C**.

A statistical procedure, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in U.S. EPA Method 600/R-99/064 and ASTM Method 1706-95B (2000), was used to compare the 10-day *C. dilutus* and the 28-Day *H. azteca* survival and growth data from the nineteen site investigative sediment samples to survival and growth data from two laboratory reference site sediment samples (sediment from a known ambient, reference location outside the project location as well as a laboratory water control). Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then tested using either the homoscedastic or heteroscedastic t-tests, which are used for comparing a single treatment to a single control.

The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Growth data were initially evaluated for normal distribution and homogeneity of variances. In those cases where the data were not normally distributed or homogenous, the data were analyzed using either the heteroscedastic t-test or the nonparametric test. In addition to growth being evaluated as average dry weight of the surviving organisms, growth was also analyzed as biomass (average dry weight of surviving organisms divided by the number of initial organisms).

The survival and growth for each investigative sample was considered statistically different when significantly lower ($p < 0.05$) than observed in the reference sediment.

Organisms exposed to the GLEC laboratory control sediment and the "water only" exposure achieved acceptable survival and growth, as specified in the U.S. EPA /600/R-99/064.

2.3 TISSUE CHEMISTRY ANALYSIS

Prior to conducting the 28-day bioaccumulation studies, 4-day *L. variegatus* acute toxicity screening tests were conducted. The 4-day *L. variegatus* acute toxicity screening tests were initiated with each of the twenty-one investigative sediment samples and one laboratory control sediment, on October 03, 2014. Adult *L. variegatus* (purchased from California Blackworm Company) were used to initiate the 4-day whole sediment toxicity screening tests. *Lumbriculus variegatus* were continuously exposed for 4-days to each of the twenty-one investigative sediment samples and to the laboratory control sediment. Consistent with the U.S. EPA method, there were four replicate samples for each investigative sediment sample and the laboratory control sample; each *L. variegatus* replicate was initiated with 10 animals. The *L. variegatus* were exposed in 470 mL glass test chambers, each containing 100 mL of whole sediment and 175 mL of overlying water.

Prior to adding the whole sediment to each test chamber, the laboratory control as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all-purpose mixer or spoon until a uniform color and texture was achieved. A subsample of the homogenized twenty-one investigative sediment samples was collected and shipped to Pace to be analyzed for the following characteristics: percent moisture, Total Organic Carbon (TOC), and grain size.

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was immediately added; this was considered to be test day -1 (October 2, 2014). Test organisms were randomly added to each replicate test chamber the following day (test day 0). Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample and the laboratory control sediment consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 mg/L and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use. The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and dissolved oxygen (DO) concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets (see enclosed compact disc). If DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO recovered to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended, until the DO values dropped below 2.5 mg/L, at which time the additional water renewals were re-initiated. Alkalinity, hardness, pH, conductivity, and total ammonia (as N) were measured on test days 0 and 4, in the overlying water for the *L. variegatus* tests (**Appendix C**). Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber

and recorded on the laboratory bench data sheets (see enclosed compact disc). The number of *L. variegatus* surviving in each replicate test chamber was recorded at test termination (4 days), and a summary of the percent survival at test termination.

A statistical analysis, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in U.S EPA Method 600/R-99/064 and ASTM (2000) Method 1706-95B, was used to compare the 4-day survival of the laboratory control to the investigative sediment samples. In this instance, the laboratory control was used for comparison with each of the twenty-one investigative sediments. Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then tested using either the homoscedastic or heteroscedastic t-test, which are used for comparing a single treatment to a single control. The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Adult *L. variegatus* were continuously exposed for 28-days to the twenty-one investigative sediment samples. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were initiated on three different days. On October 08, 2014 the following seven sediment samples and one laboratory control were initiated; SS-1022-AT, SS-1024AT, SS-1032-AT, SS-1021-AT, SS-1026-AT, SS-1028-AT, and SS-1025-AT. The second set of seven sediment samples; SS-1010-AT, SS-1029-AT, SS-1001-AT, SS-1042-AT, SS-1009-AT, SS-1017-AT, and SS-1011-AT, were initiated on October 22, 2014 with one laboratory control sediment. The remaining seven sediment samples were initiated on November 12, 2014 with one laboratory control sediment and the following sediment samples; SS-1031-AT, SS-1033-AT, SS-1034-AT, SS-1002-AT, SS-1005-AT, SS-1041-AT, and SS-1012-AT.

Adult *L. variegatus* were exposed in 3 liter (L) glass tanks, each containing 1L of whole sediment and 2 L of overlying water. Temperature-controlled overlying water was supplied to each test chamber via a continuous-renewal water delivery system at a rate of 5 mL/min (± 2 mL/min). All test chambers were aerated at approximately 100 bubbles per minute for the full duration of the test. The overlying water consisted of de-chlorinated municipal (Lake Michigan) water of moderate hardness (~140 mg/L). Consistent with the test procedure, there were five replicate tanks for each sediment sample, each initiated with 30 grams of *L. variegatus* (as per study plan).

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod of 16 hours light and 8 hours dark; and ambient lighting. Water temperature and dissolved oxygen were monitored daily in two random replicates for each test sample. Alkalinity, hardness, pH, DO, conductivity, temperature, and total ammonia were measured at Day 0 (test initiation) and on days 7, 14, 21, and 27 (**Appendix C**).

All test chambers were checked daily to assess organism behavior and no unusual observations were noted with the test organisms. Consequently, the *L. variegatus* whole sediment toxicity tests are valid assessments of sediment toxicity.

The overlying water quality measurements were also within the acceptable limits following the U.S. EPA testing protocol (i.e., daily mean temperatures were 23 ± 1 °C; DO was maintained above 2.5 mg/L in the overlying water and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type). Total ammonia over the duration of 28 days varied between 0.03 mg/L and 1.72 mg/L in the overlying water among all sediment types. Consequently, the *L. variegatus* 28-day bioaccumulation sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment toxicity. At test termination, the test organisms were recovered from each replicate chamber using reasonable effort until a minimum of 15 grams of *L. variegatus* per replicate or 70 grams of *L. variegatus* composited per sediment sample) was recovered. The final total depurated wet weight (g) of surviving *L. variegatus* was also determined at test termination and is provided in **Appendix C**. After 28-29 days of exposure, the surviving *L. variegatus* were depurated for 24 hours in overlying water to purge all gut contents. Due to the quantity and physical characteristics of the sediment samples an inordinate amount of time was necessary to remove the organisms, Therefore, test termination for all twenty-one sediments ranged between 28 and 29 days.

After the 24-hour depuration period, the surviving *L. variegatus* were weighed, then frozen in glass jars (supplied by the analytical laboratory) and shipped to Pace for tissue analysis on the following analytes: percent lipids, percent moisture, polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCB) Archlors, and Dioxin/Furans (**Appendix C**).

2.4 SEDIMENT CHEMICAL ANALYSIS

Sediment samples from each site location were retained for chemical contaminant analysis with testing by Pace. Sample jars provided by the laboratories were individually packaged and labeled with date, time, and sample ID before they were shipped under COC to Pace.

Sediments collected were analyzed for contaminants including:

- Polyaromatic Hydrocarbons (PAHs) U.S. EPA Method 8270 SIM;
- Polychlorinated Biphenyls (PCBs; preferentially calculated as congener sums) U.S. EPA Method 8082;
- Polychlorinated Dibenzodioxins and Furans(PCDD/F) U.S. EPA Method 8290;
- Metals U.S. EPA Methods 6010/6020, including:
    - Arsenic;
    - Cadmium;
    - Chromium;
    - Copper;
    - Lead;
    - Mercury;
    - Nickel; and
    - Zinc

Additional information pertaining to sampling procedures, sample locations and depths, decontamination procedures, sample shipment and COC protocols, laboratory sample processing for contaminant analysis and toxicity testing procedures, and associated quality control is provided in the SAP **Appendix A**.

2.5 MACROINVERTEBRATE COMMUNITY ASSESSMENT

Macroinvertebrate community sampling corresponded with sediment chemistry and bioassay sample collection. At each macroinvertebrate community sample station sediment was collected using a ponar grab, placed in a bucket, fixed in 10% formaldehyde, sealed and then shipped to GLEC's laboratory for sorting, enumeration, and morphological taxonomic identifications. A total of 21 individual sample locations within the project site were selected based on habitat priorities. Field observations associated with borings and grab samples are provided within **Appendix B**. Upon receipt at the laboratory, the macroinvertebrate samples were sorted, enumerated and identified, and the following metrics calculated:

- Abundance;
- Taxa Richness;
- Shannon-Weaver Diversity Index;
- Simpson Diversity Index;
- Hilsenhoff Biotic Index;
- Scrapers/Filterers;
- Ephemeroptera/Plecoptera/Trichoptera (EPT)/Chironomid (EPT Index);
- Shredders/Total;
- Dominant Taxon and Percent Composition;

These metrics were used to assess differences in the macroinvertebrate community between on-site and reference sample locations as well as comparisons to community metrics calculated for the project area in 2010 following the Removal Targets outlined in the 2013 RAP Update. The Removal Targets state that the conditions do not significantly differ from unimpacted sites with compareable characteristics. Additional information pertaining to sampling procedures, sample locations and depths, sample collection, decontamination procedures, sample shipment and COC protocols, laboratory sample processing and procedures, and associated quality control is provided in the SAP and in **Appendix A**. Additionally, results were also compared to a Progress Report (EPA 2014) in which benthic community metrics were evaluated across the AOC and were compared to benthic community metrics in areas that were determined as "least disturbed".

2.6 KRIGING

Kriging was used to delineate areas where sediment contaminants are predicted to exceed Level II SQT and Level I SQT screening thresholds (Crane and Hennes 2007). Kriging is a Gaussian process regression method of interpolation where values are modeled by covariances to optimize smoothness of the fitted values (Emery 2005; Krige, D.G.; Stein, M.L. 1999). Kriging uses a weighted average of known values to derive estimates for locations without any sample information by using site-specific spatial covariance information to inform the weights. Ordinary kriging was used for the evaluation of the 40th Avenue data. Sediment kriging followed the methodology outlined in the "40th Avenue West Restoration Evaluation" (LimnoTech 2014), as follows:

The percent deviation from the Level I and Level II SQT were calculated for each parameter in each sample.

$$PD_p = (C_p - SQTI_p \text{ or } SQTII_p) / SQTI_p \text{ or } SQTII_p$$

where PD_p is the percent deviation for each parameter p;
C_p is the concentration of parameter p in the sample; and
$SQTI_p$ or $SQTII_p$ is the Level I or Level II SQT for parameter p.

For each station the maximum value of PD_p for any sample in the 0-50 cm interval was calculated. The maximum deviation from the Level I or Level II was used in the interpolation.

Ordinary Kriging was performed using the Geostatistical Analyst Package in ArcMap 10 from ESRI. The semivariogram model used to inform the interpolation weights is dependent on site-specific data, and should be re-evaluated as new data become available. Level I kriging was performed because the difference between the Level I and Level II SQTs can be orders of magnitude higher and there can be sediment contamination risk, although lower than those associated with Level II SQT exceedances, at sites that exceeded SQT Level I thresholds but are below the Level II SQTs.

Kriging was also used to interpolate a combined benthic metric for the 40th Avenue project site. The spatial distribution of benthic metrics was evaluated by performing ordinary kriging on a combination of benthic metrics using the low of the 95% confidence interval of the average value for four benthic invertebrate metrics i.e. Shannon-Weiner diversity, abundance, species richness, and EPT Index for the SLRAOC reference locations sampled in 2010. By calculating the average reference metric for each of these four parameters from the 2010 study, it was possible to develop a screening threshold for benthic infaunal community data that can be used as achievement goals and measurements of success for future restoration objectives. In addition, the MPCA will be using an AOC-wide multi-metric to ecologically monitor 40th Avenue West and determine potential risk to organisms. When this multi-metric screening factor becomes available it will be used to compare with existing 40th Avenue West data. These thresholds can be considered low range values that the restored habitat should meet in order to have comparable ecological function to the reference locations. AOC delisting goals may be different for benthic community metrics, and will be compared in separate evaluations as part of the delisting process.

3.0 RESULTS

3.1 PHYSICAL HABITAT CHARACTERIZATION

Habitat characterization, water, and sediment sample collection occurred over a five day period from September 14 through 19, 2014 with clear skies, low wind, and temperatures ranging from 30-50 degrees Fahrenheit (F) excluding September 16 where high winds prevented work in the afternoon and subsequently on the morning of September 17. Work commenced on the 17th and in-water targeted stations were successfully sampled. Sediment samples for TOC and grain size were sent to Pace. Water quality data was generally consistent between the four sampling stations investigated. Sulfides were not detected at any of the station locations and nitrogen (measured as ammonia) was relatively low ranging in value of 0.19 mg/L at Station 1041 to a low of 0.098 mg/L at Stations 1004 and 1016. Station 1012 had an intermediate ammonia concentration of 0.13 mg/L (**Figure 2**). USEPA sets total ammonia thresholds at 3.48 mg/liter at pH 6.5 and 0.25 mg/L at pH 9.0. None of the values sampled at the four stations within the project site had values above 0.25 mg/L and, thus, ammonia is not a major concern at these locations.

The results of the grain size analysis completed by Pace are summarized within **Figure 3** and **Table 3** with additional information provided in **Appendix A**. Distribution of grain size varied among the stations with Stations 1028, 1029, and 1042 being comprised of 75% or greater sand while the remaining stations sampled were comprised of 50% or greater silt. Stations 1028, 1029, and 1042 were located close to each other and in near vicinity to vegetated wetlands while the other locations were along developed shorelines or in open water. Clay was a minor constituent of the overall sediment texture at the sampled locations. The USACE funded the sediment texture and geotechnical analysis of numerous sediment cores throughout the proposed project as part of a different study with Jewell. These results are summarized in The 40th Avenue West Remediation-to-Restoration Focused Feasibility Study (Jewell, et al 2015)

Wood particles and chips were identified within different horizons of samples throughout the project site. Some woody particle material was related to natural peat in the sediment while other particles were from anthropogenic influences such as the adjacent pulp and paper mills. In particular, the area known as "Coffee Ground Flats" had a high incidence of wood chips in sediment sample horizons.

3.2 SEDIMENT CHEMICAL ANALYSIS

Extensive bulk sediment chemistry was performed by Pace from the samples collected within the 40th Avenue site location (**Figure 1**). Data was qualified and determined valid through a process or Quality Assurance and Quality Control Review by Stantec. Through this process it was determined that samples met the criteria for validity including precision, accuracy, sensitivity, and completeness. Validation reports are provided within **Appendix D**.

In recognition of challenges that are associated with sediment management in the St. Louis River AOC, two types of narrative sediment quality targets (SQTs) were established by the MPCA and its collaborators (Crane et al. 2000).

- Level I SQTs are intended to identify contaminant concentrations below which harmful effects on sediment dwelling organisms are unlikely to be observed (**Table 7**)
- Level II SQTs are intended to identify contaminant concentrations above which harmful effects on sediment dwelling organisms are likely to be observed (**Table 7**)

Results are summarized in **Figures 4-16.** Constituents tested include dioxin/furans with TEQ calculations, metals (cadmium, lead, mercury, nickel, arsenic, copper, zinc, and chromium), PCBs, PAHs , and percent moisture. Pace laboratory reports are provided within **Appendix F.** In addition to sediment constituents, visual observations were made on the presence of wood particles from sediment grabs**.** For a better understand of overall chemical toxicity of the sediment, PEC-Q (Probable Effect Concentration Quotient) were calculated following methodology provided within Crane and Hennes (2007). For this study PEC-Q was calculated using Metals (without mercury), PCBs, and PAHs. Mean PEC-Qs provide a sediment assessment tool that distills data from a mixture of contaminants into one unitless index. The mean PEC-Q provides a way to compare sediment quality over time and space (Long *et al*. 2006). For toxicity tests, incidence of toxicity tends to increase as the mean PEC-Q ranges increase. High PEC-Q values tend to suggest sediment that is affected by higher concentrations of chemical constituents. The PEC-Q provides a reliable basis for predicting if sediments are likely toxic or not toxic in the St. Louis River AOC (Crane *et al*. 2000, 2002). Because PCBs were largely below detection limits, three PEC-Q calculations were made. PEC-Q values were calculated using 0 as a value for non-detected PCB data, subsequently using half the detection value of PCBs and then eliminating PCBs entirely from the quotient to best assess potential toxicity of the sediment samples being evaluated (**Figures 15 and 16**).

Dioxin/Furan results were calculated to TEQ (toxic equivalent) values following methodologies in Crane and Hennes (2007) with Level I and Level II SQT values presented within **Table 7**. These values were calculated for fish toxic equivalency factors (TEFs) based on Van den Berg et al. (1998) as has been done in previous years for studies at the 40th Avenue project site. By calculating TEQs this allows for toxic assessment of the polychlorinated dibenzo-p-dioxins/dibenzo furans (PCDD/Fs ; in ng TEQ/kg dry weight). For all bulk sediment chemistry values below Level I SQTs are identified in green, above Level I SQTs are yellow and above Level II SQTs are red on the figures.

Figure 4 maps the TEQ results from 40th Avenue site sediment tested by Pace. Stations to the northeast of Erie Pier had no Level II SQT threshold exceedances for TEQ results. To the south and southwest of Erie Pier there were eleven (11) stations that had at least one horizon of sediment with a TEQ Level II SQT exceedance and other stations such as 1031, 1033, and 1034 that had a surficial exceedence above Level I and a lower horizon sediment threshold exceedence above Level II SQT.

Overall metals concentrations within sediments samples from the 40th Avenue location showed some Level I SQT exceedances and no Level II SQT exceedances. **Figures 5-9** map metal concentrations. **Figure 5** shows arsenic concentrations with five (5) of the twenty-eight (28) stations sampled having Level I SQT exceedances often at individual horizons and not for the entire core sample. Cadmium had four (4) stations with Level I SQT exceedances for individual horizons (**Figure 6**) with cadmium results having multiple horizon exceedances at the southwestern corner of Erie Pier where TEQs for dioxin/furans were exceeded. Lead had individual horizon level I SQT exceedances at six (6) locations including the southwestern corner of Erie Pier as well as in the vicinity of the coal fired power plant located on the western shoreline of the 40th Avenue project location (**Figure 7**). Mercury is an important metal that has been shown to be highly bioaccumulative, particularly when methylated. Total mercury were found to have concentrations within fourteen (14) of the twenty-eight stations (28) samples above Level I SQT screening thresholds (**Figure 8**). In particular, the southwestern corner of Erie Pier (Stations 1033 and 1034) had Level I SQT value exceedances for mercury at each horizon sampled. **Figure 9** shows nickel results with six (6) stations having Level I SQT exceedances for horizons sampled with two of these locations being Stations 1033 and 1034 (southwestern corner of Erie Pier). Percent moisture for horizons sampled at each station location is shown in **Figure 10**. **Figure 11** plots the types of wood particles identified from samples collected during the survey. Wood particles are thought to be debris from historical wood industry.

PCBs were largely below detection limits for the samples collected for all congeners tested (**Figure 12**). There were Level I SQT value exceedances at Stations 1033 and 1034 in the southwestern corner of Erie Pier as well as at 1042 and 1026 behind the existing coal fired power plant. These were the only four locations where PCBs had concentrations above the detection limit. The remaining stations (all horizons sampled) had concentration below detection limits. Total PAH concentrations are shown in **Figure 13**. Several stations had Level I SQT exceedances but there were no Level II SQT value exceedances except at Station 1026 behind the power plant from sediment collected between 16 to 50 cm.

The AOC Phase IV database summarizing sediment PEC-Q prior to 2005 showed the area around Erie Pier and 40th Avenue was generally above the Level I SQT screening thresholds (**Figure 14**). Mean PEC-Q from the 2014 sediment collected was first calculated using PAH and metals data only because PCBs were largely absent. When mean PEC-Q data is screened against SQT values nineteen (19) of the stations had Level I SQT exceedances in at least one horizon, with 18 of those stations having Level I SQT exceedances in the surficial layer (**Figure 15**). Station 1026 was the only station with a Level II SQT exceedance in the 15-50 cm layer (**Figure 15**). A second approach to calculating mean PEC-Q values used "0" values for non-detectable PCBs while a third approach used the one half the method detection limit as a substitute for non-detectable PCB concentrations in the sediments sampled. The results of these two calculations are very similar, largely because the method detection limits were low, and show no Level II SQT value exceedances (**Figures 16 and 17**). All sediment layers sampled at the southwestern corner of Erie Pier had Level I SQT exceedances (1033 and 1034). Station 1010 also showed Level I SQT exceedances from the horizons sampled. These exceedances should be

attributed to total PAH and metal concentrations in sediments, not PCB concentrations based on screening results of the primary data. However, the PEC-Qs do not take into account Dioxins/Furans which also appear to be constituents of concern.

3.3 BENTHIC MACROINVERTEBRATE COMMUNITY ASSESSMENT

Multiple metrics were calculated to estimate differences in diversity, composition, and tolerance levels between benthic macroinvertebrate communities at the 40th Avenue sample locations. These metrics are summarized in **Table 8** with original data, bench sheets, and COCs provided within **Appendix F.** The USEPA 2010 St. Louis River Estuary study collected reference station data for macroinvertebrate communities within the 40th Avenue project area and at reference locations outside the site footprint. These references stations were used to generate screening thresholds to set benthic community achievement goals. To determine how closely stations were to the mean benthic community reference macroinvertebrate metric threshold for abundance, species richness, EPT Index, and Shannon-Weiner diversity, an average was calculated for each of these metrics and then a standard deviation of this mean was calculated. A mean of macroinvertebrate site sediment community metrics were also calculated and were compared to the lower 95% confidence limit of the reference location mean. This method allowed for us to determine how closely the macroinvertebrate metrics from the 2014 site data were to reference locations. Furthermore, it gives a threshold that can be used as an achievement goal with regard to assessing success of future remediation efforts. Macroinvertebrate screening thresholds are shown as a solid line on graphs with the macroinvertebrate metrics.

Macroinvertebrate abundance (number of organisms/m^2) ranged from 40 individuals (Station 1024) to 2300 individuals (Station 1029) (**Figure 18**, **Table 8**). Stations from 2014 had similar abundances to 2010 USEPA results within the project site but were lower than the 2010 reference locations (**Figure 18**). Species richness from the 2014 macroinvertebrate assessment (**Table 8**) was similar to 40th Avenue site species richness observed in 2010 (**Table 9**) but when upstream reference locations from the 2010 study are compared both 2010 and 2014 species richness were lower than the 2010 reference locations. Taxa richness in 2014 had the same range as 2010 with a high of 21 species at Station 1029 and a low of 2 species at 1024. In 2010, richness within the project site had a high of 21 species at REM02 with a low value of 2 species at REM05 (**Figure 19**). Macroinvertebrate diversity (Shannon-Weiner) was also similar when site stations from 2014 were compared to the 2010 dataset exclusive of the reference locations (**Figure 20**).

The Hilsenhoff Biotic Index (HBI) was evaluated for the 2014 data (**Table 8**). While this metric is most appropriately used for samples collected in streams with D-net samplers, it remains a useful index for samples collected by ponar grabs, such as this study. For this index, the macroinvertebrate assemblage tolerance with respect to nutrient enrichment is scored from 0 to 10; with higher scores correlated with increasing perturbation (Hilsenhoff, 1977). For the 40th Avenue macroinvertebrate communities, the HBI ranged from 3.94 to 7.08. Values for most of the samples in 2014 had HBI scores between 5.51 to 6.50 range which indicates fair water quality with significant organic pollution (Hilsenhoff, 1977) and the data from 2010 site samples were

similar. While Hilsenhoff metrics are commonly calculated for freshwater ecosystems it is recommended that this metric not be used for regulatory decisions because it is not an appropriate metric for open water habitats.

A taxon that is indicative of improved water quality is *Hexagenia* sp. (Ephemeroptera). When the reference locations are removed from the 2010 dataset and only stations within the 40th Avenue area are compared for abundances and species richness these metrics appear to be higher in 2014, however, the species richness metric may be higher in 2014 due to improved taxonomic resolution by the laboratory (**Figure 21a and Figure 21b**)

A number of indices assessing the ratios between key indicator groups were also calculated for 2014 and included scraper/filterer, EPT/chironomid, and shredders/total (**Table 8**). With all of these indices, lower scores are correlated with increased perturbation. Scraper/filterer values were low with most stations having no scraper/filterer within the community. This is not surprising considering these feeding guilds typically are not representative of open water environments and are more common in habitats with algae cover (Burton and Pitt, 2001). EPT/chironomid values were generally low and consistent between 2014 sites (**Figure 22**). As with the scraper/filterer metric, the Ephemeroptera/Plecoptera/Tricoptera (EPT) taxa are more commonly found in streams and not in open water environments. When EPT Index is compared between 2010 and 2014 the values are within similar ranges for within 40th Avenue site stations but stations in the 2010 reference location had higher EPT index values. Species diversity, abundance, and richness showed no differences between the 2010 and 2014 40th Avenue site data (**Figures 23, 24, and 25**).

Other metrics that were calculated included the Dominant Percent Composition to assess the balance of the macroinvertebrate community. The dominant taxa accounted for 20.00% to 57.14% of the total organisms for the 2014 data. Lower dominant taxa percentage indicates communities with a richer species complex; therefore many of these samples were comprised of similar species with high dominance values. (**Table 8**) and suggested that remediation of sediments to include removal of anthropogenic material and contaminants could lead to healthier macroinvertebrate communities.

A comparison of observations from the AOC benthic community Progress Report (EPA 2014) to the results of this study indicate that the areas identified in this report as below reference conditions are also areas that are below "Least Impaired" communities throughout the St. Louis River.

3.4 TISSUE BIOACCUMULATION

Lumbriculus variegatus 28-day bioaccumulation tests were were conducted using sediment collected at the same locations as the toxicity tests. Survival was evaluated after 4 days to evaluate test conditions. Survival of worms exposed to test samples were compared to the laboratory control sediment. The *L. variegatus* survival in test sediments was not significantly reduced after 4-days of exposure as compared to the laboratory control sediment and the experiment proceeded for 28-29 days of exposure. After this amount of time, *L. variegatus* were

depurated for 24 hours in overlying water to purge gut contents. The surviving *L. variegatus* were weighed and shipped to Pace for analysis of tissues. Results from tissue analysis were validated to U.S. EPA standards. Results from tissue tests are provided in **Table 6** for metals, PAHs, dioxin/furans and PCBs.

For the metals tests on *L. variegatus* tissues (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, and Nickel), results showed low levels of uptake of these contaminants. Similarly, for PCB tissue tests tissue concentrations indicated a low uptake and sediment results for the majority of congers were non-detectable. Tissue results for PAHs were low and often below laboratory reporting detection limits (**Table 6**). However, dioxin and furan congeners showed a range of uptake, and all tissues contained concentrations of dioxin and furan congeners. The presence of dioxins and furans in worm tissue may present a pathway of exposure for fish and wildlife resources.

Bioaccumulation was calculated for the worm tissues by dividing the worm tissue concentrations by sediment concentrations. Following USEPA Biota-Sediment Accumulation Factor (BSAF) protocols, tissues tested were lipid normalized. Results suggested that for dioxin/furans and total PAHs, this species did not uptake these constituents consistently as sediment concentrations increased. There was also no evidence that sediments in silty/clay areas had higher bioaccumulation than stations with sandier sediment consistency (**Table 6**). However, several stations had high uptake of dioxin or furan individual congeners and the sediments at these stations either exceeded Level I or Level II SQTs.

Dioxin/furan tissue TEQ concentrations are mapped in **Figure 26** with a classification of wood type found at these locations. Analysis of the results of dioxin and furan congeners within *L. variegatus* tissues exposed to 40th Avenue sediments suggested that while there was variability of uptake several congeners had positive correlations (**Figure 27**).

3.5 WHOLE SEDIMENT TOXICITY

Sediment used for the bulk chemistry and toxicity testing was collected during the same timeframe as the macroinvertebrate, water quality, and physical habitat characterization samples. The toxicity tests using *C. dilutus* (10-day) were conducted from November 4 through November 14, 2014. Tests conducted using *H. azteca* (28-day) were conducted November 4 through December 2, 2015. Growth and survival comparisons of *H. Azteca* between laboratory control groups were tested ($p<0.05$) according to the statistical guidelines detailed in U.S. EPA Method 600/R-99/064 (U.S. EPA 2000) and ASTM Method 1706-95B (ASTM 1999). **Appendix C** provides GLEC and Pace sample analyses. For both organismal toxicity tests, reference sediment was also used to compare results with site sediment. Reference sediment was collected from a source by GLEC to be known to have no perceivable anthropogenic influence.

The *H. azteca* 28-day and *C. dilutus* 10-day toxicity tests had high survival when exposed to the laboratory control and site sediment. The GLEC laboratory control and reference sediment controls had 95% to 100% survival. The majority of 40th Avenue project sites showed greater than

80% survival (all but stations 1001 with 73.8% and 1005 with 78.8%) for *C. dilutus* tests and all but 1042 with 50% surviva) for *H. azteca* tests (**Figure 28**). However, eleven of the twenty-one stations showed statistically significant differences from the laboratory and laboratory sediment controls with regard to survival for *H. azteca*. Eighteen of the twenty-one stations showed statistically significant differences from laboratory sediment controls with regard to survival for *C. dilutus*. Growth and biomass were generally lower at all locations including water controls when compared to reference sediment (**Figure 29**) Twenty of the twenty-one stations showed statistically significantly lower growth and all of the test stations had significantly lower biomass when compared to the laboratory controls for *H. azteca*. For *C. dilutus*, all test stations had significantly lower growth and biomass when compared to the laboratory controls (**Table 4**). The highly significantly different survivability rates, lower biomass, and growth suggested there is some level of toxicity in the 40th Avenue sediments tested.

3.6 KRIGING

Ordinary kriging was performed on the maximum deviation from the Level II SQT (i.e. the maximum value of each result for each parameter divided by the respective Level II SQT). Interpolated positive values are estimated to have a contaminant exceeding the Level II SQT, while negative values are estimated to have all values below the Level II SQT. Results of the sediment kriging for total PAH screened to Level II SQTs showed that the majority of the sampled area is not anticipated to exceed Level II SQTs except for Station 1026 (**Figure 30 and 31**). Analyzing the same data and kriging the results to Level I SQTs showed that the majority of the site area (excluding Coffee Ground Flats) has high potential to exceed the Level I SQT thresholds. For TEQ results, kriging to Level II SQTs showed four locations where sediments are likely to exceed Level II thresholds. When the same data was kriged to Level I SQTs the entire area is anticipated to exceed this threshold (**Figure 32 and 33**). TEQ kriging was performed on data that used fish toxicity TEFs to determine TEQs (Berg et al. 1998), however other TEFs occur such as those provided in Sediment Quality Guidelines for Canada that are lower than the U.S. TEFs for certain dioxin and furan congeners.

Benthic infaunal community metrics were kriged to the lower 95% confidence interval for the reference stations. The 2010 and 2014 data were scaled then kriged to the calculated thresholds for four macroinvertebrate parameters. The results show lower macroinvertebrate community habitat quality at the same locations where dioxin/furan TEQ Level II SQTs were exceeded and where there is degraded habitat quality. These lower quality macroinvertebrate habitats were located at Coffee Ground Flats, (Stations 1024 (2014) and REM 11 and REM 17 (2010)) and the southwestern corner of Erie Pier (Stations 1033 and 1034 (2014)). The lower habitat quality at Coffee Ground Flats is likely a consequence of the presence of wood waste, which is not optimal for macroinvertebrates. The remaining two areas where there was lower habitat quality correlated with sediments that had exceedances for Level II SQTs for TEQs and Level I SQT exceedances for total PAHs (**Figure 34**). Macroinvertebrate kriging was performed for 2010 (**Figure 35**) and 2014 (**Figure 36**) data individually and results were similar to the combined interpolation including both years.

4.0 DISCUSSION

The St. Louis River AOC includes a gradient of sediment chemistry concentrations, which includes sites that are uncontaminated presenting low risk to aquatic organisms to sites with higher levels of contamination presenting a high risk to organisms utilizing this habitat. Sediment chemistry is correlated to sediment texture because areas with fine silts and clays have a higher affinity to bind contaminants than sediments with sand and coarser grain size particles. The area known as "coffee ground flats" located southwest of Minnesota Power Plant has a high prevalence of wood particles present within the freshwater sediments as a result of industrial wood processing. Both the sandy and woody sediments from the area studied have a lower affinity to bind some contaminants than more silty sediments.

Sediment texture analysis has identified three major categories of sediment type within the 40th Avenue project area:

- Sediments comprised largely of silt in more open water areas
- Sediments comprised of more sand identified within and adjacent to the pocket marsh system in the vicinity of the western two ponds.
- Sediments largely comprised of woody, anthropogenic material.

Along the western edge of the project site is a system of two ponds (referred to by Stakeholders as ponds behind Erie Pier) in which previous sediment chemistry data indicated elevated contaminant concentrations, and has been identified as a "Remediation Site" by the MPCA. The two ponds system has a narrow opening directly into the project area. This opening is allowing a plume of water and sediment with contaminants from these two ponds to be released. Because the sediment in this narrow opening is largely sandy, the sediment did not show high contaminant concentrations. However, this plume of water from these two ponds are likely being transported downstream to areas adjacent to Erie Pier where sediments are predominantly silty, and have higher affinity to bind contaminants (e.g. Stations1033 and 1034). It is hypothesized that the plume of sediment and water from these two ponds is traveling along the bulkhead shoreline and is being deposited into this southwestern corner of Erie Pier. This area where constituents have higher concentrations (e.g. Stations1033 and 1034) should be considered as an area of sediment quality consideration where management actions (e.g. removal or confinement) should be considered to eliminate or reduce the risk these sediments may pose to aquatic resources. However, prior to any work being completed in this area, the contaminated sediments in the two ponds should be addressed. Without remediation of these ponds it is highly likely that contaminants will continue to concentrate in the corner of Erie Pier reducing sediment quality and presenting a risk to organism health.

Dioxin/furans as well as PAHs and select metals had variable concentrations with spatial heterogeneity within the project site with several elevated concentrations. Although concentrations of some contaminants at certain sites show a reduction when compared to prior

years (Phase IV database), the continued elevation of these classes of contaminants should be considered constituents of concern throughout the project area. The PCB congeners tested showed no detection for the majority of station locations with only three locations exceeding Level I SQT thresholds. Stations 1033 and 1034 in the southwestern corner of Erie Pier were the only two stations that consistently had elevated concentrations for metals and PCBs as well as PAHs and dioxin/furan TEQs, further indicating that isolated area should be considered for remediation.

Because PCB concentrations were largely non-detectable, mean PEC-Qs was calculated three ways: (1) without PBCs; (2) with half the detection limit substituted for PBC non-detectable concentration; and (3) with "0" value substituted for the same undetectable levels. With the low PBC detection limits, there were no differences observed when PEC-Qs were calculated with "0" or half the detection limit. Using half the detection limits or a "0" value showed no Level II and fewer Level I exceedances when the compared to PEC-Q results that included only PAHs and metals. This suggested that using half the detection limits, when detection levels are low, may not account for potential sediment toxicity as the mean is being reduced significantly by including these undetectable PCB values. When PEC-Q was calculated using metals and PAHs only, the results indicated that there is a greater potential risk of sediment toxicity to natural resources **(Figures 37 and 38).**

In addition, mean PEC-Q should not be the only parameter used to determine the overall health and habitat quality. Using PEC-Qs should be considered part of the weight-of-evidence approach that includes other sediment quality indicators such as chemistry, physical qualities (presence/absence of wood particles), toxicity, macroinvertebrate community structure (Crane and MacDonald 2003), and other bioaccumulative information. Furthermore, due to uncertainties with bioavailabity, sediment chemistry alone leaves a large amount of uncertainty as to the true toxicity of the contaminants to benthic macroinvertebrate organisms as well as the risk these contaminants may pose to other levels of the food web.

Stations with wood waste had lower percent moisture, larger particle sizes, and were less optimal for macroinvertebrate communities based on richness and abundance results. The presence of anthropogenic woody material within the surficial sediments, particularly in the area called "coffee ground flats" (southwestern portion of the overall project location) showed low abundances and species richness both within the 2010 and 2014 sampling program, while sediment chemistry concentrations had fewer elevated concentrations and lower mean PEC-Q results suggesting that sediment toxicity was not posing a high probability of ecological risk to the benthic community. Additionally, survivability in the toxicity tests at these stations was reduced in comparison to laboratory controls. These results indicate the presence of woody material in surficial sediments is likely posing a risk to the benthic macroinvertebrate (and plant) communities, as indicated by the increased mortality in the toxicity tests and low macroinvertebrate community metrics. Remediation of these locations with habitat restoration would benefit the overall ecosystem.

Sediment toxicity based on results from bulk chemistry exposure for 28-day *Hyallela azeteca* and 10-day *Chironomus dilutus* were relatively high in survival with the majority of stations having survivability of 80% or greater but statistically significant differences were calculated when the site sediments were compared to laboratory and in-site reference sediments. Additionally, multiple stations showed a decrease in growth and biomass, as compared to the in-site reference. This is likely correlated to both sediment chemistry and consistency. In areas such as coffee ground flats, the overall poor sediment conditions for macroinvertebrates is likely creating an area with low abundances and diversity. In areas where sediment contaminants exceed thresholds such as south of Erie Pier and behind the existing power plant, the general sediment chemistry may be influencing organisms' survival, growth and biomass.

Bioaccumulation in *L. variegatus* tissues were more strongly correlated to individual furan sediment congeners concentrations than to the overall TEQ or individual dioxin congeners. High variability was observed within dioxin tissue concentrations and the variance among this dataset resulted in low correlation values. Some individual dioxin and furan congener tissue concentrations were found to correlate to sediment concentrations, suggesting individual congeners need to be considered for bioaccumulation and how they could pose a potential risk to fish and wildlife resources. Because sediment chemistry and bioaccumulation showed correlation at the congener level, and supplemental evaluations were limited to benthic macroinvertebrate endpoints, additional sampling and/or testing of organisms more sensitive to dioxin and furan congeners from the St. Louis River 40th Avenue project location could elucidate potential toxicity risk associated with the sediments within the ecosystem Additional sampling and/or testing will also provide information that could be used to help with assessments at other locations within the St. Louis Estuary that have similar dioxin and furan MPCA SQT Level I and Level II threshold exceedances. Additional lines of evidence could include resident tissue concentration assessments, including macro invertebrates, fish and birds.

Station 1042 was located in an area adjacent to the outflow of the two ponds behind Erie Pier where prior studies showed high levels of sediment contamination. However, the sediments within this area were sandy and the marsh grasses provide three dimensional structures that support higher diversity and species richness. Remediation efforts should also include the two ponds area prior to remediation at other select areas in the project area.

An ecological risk conceptual model of the 40th Avenue Project site is provided within **Figure 37** to assist with identifying the different pathways of contaminant exposure to help understand how contaminated sediments could potentially bioaccumulate within the system. The benthic macroinvertebrates exposed to contaminated sediments are a food source for numerous higher level predators including fish, reptiles, amphibians and bird. Several secondary predators such as mammals, raptors, and larger fish are also of concern as they depend on the intermediate organisms that feed on the macroinvertebrates. Ecological concern areas related to restoration and remediation activities for the 40th Avenue site are outlined within **Figure 38.** Management Units (MUs) and ecological concern area recommendations are presented within a separate chapter of the Focused Feasibility Study. The project site has five main areas of ecological concern as shown on **Figure 38** describe below:

1. Coffee Ground Flats (Area 1) – Sediment in this MU is primarily anthropogenic wood waste and is providing poor quality habitat for benthic macroinvertebrate communities. Sediment contamination is limited to few locations that may be posing a risk to resources, as observed through decreased growth and biomass. Recommended management actions include dredging of anthropogenic substrates then filling with sediment suitable to encourage aquatic vegetation growth to create high quality habitat consistent with ecological goals for the Project Area. The area around Station 1017 should also be dredged and then filled with suitable material to create a protective bioactive zone, which includes a depth of 1.2 meters near the shoreline and 1.0 meters for depths up to 8 feet to reduce the risk of the sediment contamination to ecological resources.
2. The area south of Minnesota Power (Area 2) showed low benthic habitat quality, impacts to survival, growth, and biomass, and had exceedances of SQT thresholds for mean PEC-Q and dioxin/furan TEQs. Recommended management actions for this area include remediating via dredging and then placement of clean sediment to encourage aquatic vegetation growth to create high quality habitat meeting the ecological goals of the Project Area while minimizing toxicity risk through sediment exposure. Sediment should be placed to depths identified in the design and include a 1.2 meter potential bioactive zone for shoreline areas and 1.0 meters for depths up to 8 feet, and 0.5 meter potential bioactive zone in areas identified to be below 8 feet in depth to reduce risk to ecological resources.
3. The area north of Minnesota Power and adjacent to the Hibbard Pond system (Area 3) showed exceedances of SQT thresholds for PAHs, metals, Mean PEC-Q, and dioxin/furan TEQs at multiple depths, as well as a decrease in survival at Station 1028 in *Hyallela azteca* as compared to the in-site reference. This area should be addressed through a combination of dredging and filling to meet the ecological goals of the Project Area, ensuring a 1.2 meter potential bioactive zone in shoreline areas, a 1.0 meter potential bioactive zone identified by the design to be up to 8 feet in depth, and 0.5 meter potential bioactive zone in areas identified to be below 8 feet in depth. However, this work should be completed following the remediation of the two pond system.
4. The southwestern corner of Erie Pier (Area 4) had SQT threshold exceedances of total PAH, dioxin/furan TEQ, some metals, and Mean PEC-Q. This area also had a decrease in benthic community, and a decrease in survival and biomass as compared to the in-site reference. It is hypothesized that stream flow from the two ponds system is being concentrated into this corner and management actions should not proceed until the two ponds system remediation planned effort is completed. Upon remediation of the two ponds, this area should be remediated via dredging and refilled with substrate suitable for vegetation growth and benthic macroinvertebrate establishment that meet the ecological goals of the Project Area. The depth of clean material should be consistent with St. Louis River Estuary standards (see above bioactive zone recommendations).

5. The open water area southeast of Erie Pier (Area 5) showed dioxin/furan TEQ , total PAH, some metals, and Mean PEC-Q exceedances of Level I and Level II SQT thresholds along. A reduction in benthic community, survival, growth and biomass were also observed in this area. Management actions recommended for this area include remediation by strategic dredging and the creation of an island consistent with design goals that would provide additional surface area and three-dimensional structure for vegetation establishment, which will help attract macroinvertebrates and subsequently fish, birds, reptiles, and amphibians. The depth of clean material should be consistent with St. Louis River Estuary standards (see above bioactive zone recommendations).

Toxicity tests used opportunistic, commonly tested organisms for screening purposes. It may be useful to test a more sensitive sediment dwelling invertebrate that is native to the St. Louis Estuary, which would prove to be more ecologically relevant for the Estuary. Additional benthic invertebrate testing, resident fish tissue analyses, bird egg surveys, and laboratory caged fish exposures to 40th Avenue sediments would help elucidate the risk of sediment toxicity to natural resources that utilize this ecosystem should future work determine additional information is necessary.

After all areas of ecological risk are addressed and all elements identified in the site design are implemented, this remediation to restoration plan will increase overall habitat quality and value at the 40th Avenue Project site for fish and wildlife resources while minimizing the risk these contaminants pose to the ecological community.

5.0 STATEMENT OF LIMITATIONS

The conclusions presented in this report are professional opinions based on the data presented in this report. They are intended only for the purpose, site location and project indicated. The conclusions presented in this report are based on the assumption that conditions do not deviate from those observed during our study, as described in this report. No other warranty is either expressed or implied. This report is intended for the use of Stantec's client and/or the appropriate regulatory agency only; all other uses must be approved by Stantec and the client in writing.

Prepared by:

Pamela Neubert

Reviewed by:

Dave Constant

Approved by:

Jon Gumtow

6.0 REFERENCE

ASTM (American Society for Testing and Materials). 1999. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates. ASTM Standard Method No. E 1706-95b. Am. Soc. Test. Mat., Philadelphia, PA.

Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages

Burton, G.A., D.L. Denton, K. Ho, and D.S. Ireland. 2003. Chapter 5: Sediment Toxicity Testing: Issues and Methods. In: Handbook of Ecotoxicology. 2003 Lewis Publishing, Boca Rotan, FL.

Burton, G.A., R. E. Pitt. 2001. Stormwater Effects Handbook: A Toolbox for Watershed Managers, Scientists, and Engineers. Appendix B: Benthic Community Assessment. 2001 Lewis Publishing, Boca Rotan, FL.

Hilsenhoff, W. L. 1977. Use of Arthropods to Evaluate Water Quality of Streams. Technical Bulletin No. 100, Department of Natural Resources, Madison, Wisconsin.

Crane, J.L. and S. Hennes. 2007. Guidance for the use and application of sediment quality targets for the protection of sediment-dwelling organisms in Minnesota. Minnesota Pollution Control Agency. Environmental Analysis and Outcomes Division. 64 pp.

Krige, D.G. A statistical approach to some mine valuations and allied problems at the Witwatersrand, Master's thesis of the University of Witwatersrand, 1951

Suter, G.W. II, B.W. Cornaby, C.T.Hadden, R.N. Hull, M. Stack, and F.A. Zafran. 1995. An Approach for Balancing Health and Ecological Risk at Hazardous Waste Sites. Risk Analysis 15:221-231.

Stein, M. L. (1999), Statistical Interpolation of Spatial Data: Some Theory for Kriging, Springer, New York.

USEPA (U.S. Environmental Protection Agency). 2000. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates. Second Edition. EPA/600/R-99/064, Duluth, MN.

USEPA, 2014. A Benthos-based Multimetric Index for Use in the St. Louis River Area of Concern. Progress Report, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Mid-Continent Ecology Division (MED), Duluth, MN, United States Environmental Protection Agency, Washington, DC. 42pp.

FIGURES

Figure No.

1

Title

Sediment Sample Locations Overview Map

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-18
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 500 1,000 Feet

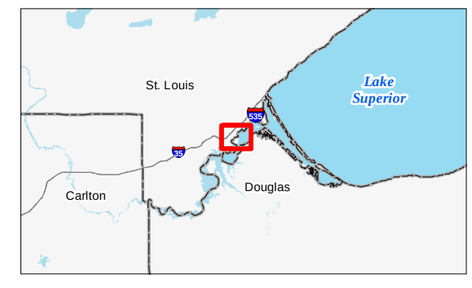
1:12,000 (At original document size of 11x17)

N

Legend

Approximate Project Location

Sample Location



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07_ph1mxds\Sediment\Map\nat\St_Louis_River_Sample Location Overview.mxd Revised: 2014-03-24 By: m.nicklin

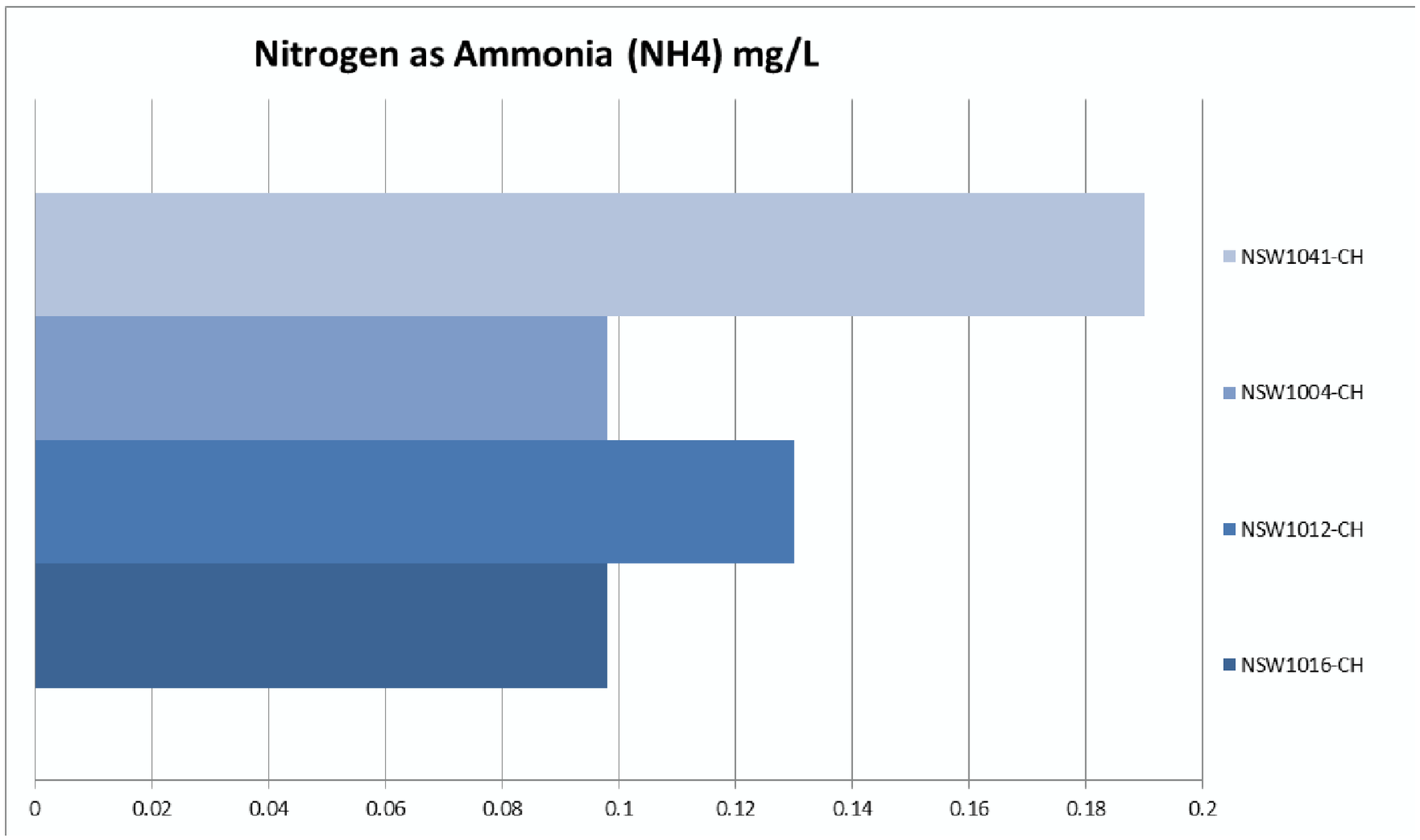


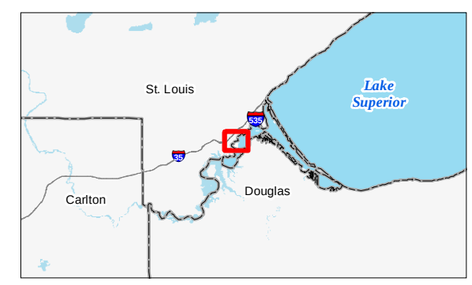
Figure No.
2

Title
Ammonia Concentrations

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location 193702726
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

N



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc. Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07_data\maps\Sediment\Mapping\St Louis River Bank Sample Locations.mxd Revised: 2015-07-08 By: mpichler

Figure No.

3

Title

Physical Sediment Analysis Grain Size

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-18
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

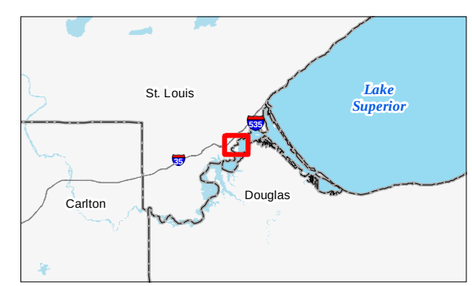
N

Legend

Approximate Project Location

Percent of each Grain Size

Clay
Silt
Sand



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1193\active\193702726\07_analysis\GIS\SedimentMapping\StLouis_River_PhysicalSediment.mxd Revised: 2015-03-25 By: mcichter

Figure No.

4

Title

Sediment Sample Locations Dioxins and Furans TEQ Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-21
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

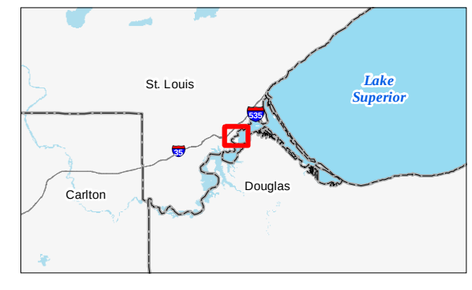
TEQ Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

TEQ SQT (CCME 1999)	
Level I	Level II
0.85	21.5



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc. Engineers • Surveyors • Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroman\St Louis River $sm\sediment location_TEQ overview.mxd Revised: 2015-03-25 By: mpichler

Figure No.

5

Title

Sediment Sample Locations Arsenic Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-26
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

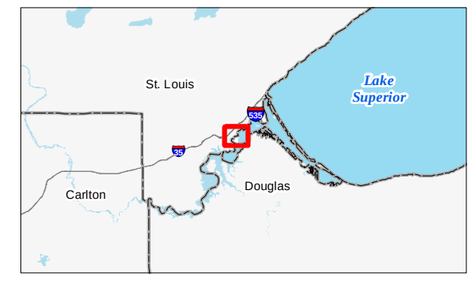
Arsenic Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
9.8 mg/kg	33 mg/kg



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers • Surveyors • Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-gis\mxds\Sediment\Arsenic\St Louis River Sediment Location Arsenic Overview.mxd Revised: 2015-03-25 By: mpitcher

Figure No.

6

Title

Sediment Sample Locations Cadmium Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-16
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

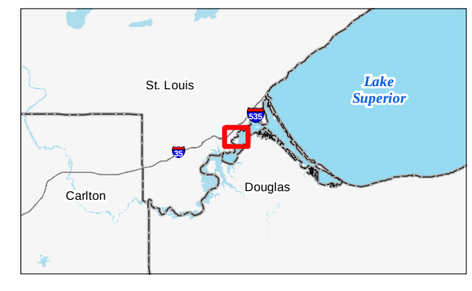
Cadmium Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
0.99 mg/kg	5 mg/kg



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aerial\SL River Sediment Location_Cadmium_overview.mxd Revised: 2014-03-25 By: mpichler

Figure No.

7

Title

Sediment Sample Locations Lead Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-25
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

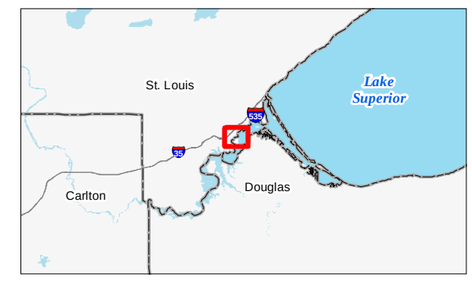
Lead Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
36 mg/kg	130 mg/kg



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc. Engineers • Surveyors • Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroman\St Louis River$\sm-relocation_Lead_overview.mxd Revised: 2015-03-25 By: mpichler

Figure No.
8

Title
Sediment Sample Locations Mercury Results

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-25
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

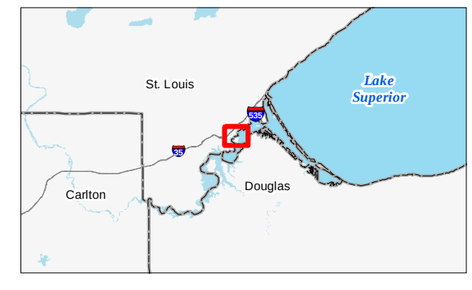
Legend

Approximate Project Location

Mercury Result
- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons
- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
0.18 mg/kg	1.1 mg/kg



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroman\St Louis River$\mercurylocation_Mercury_overview.mxd Revised: 2015-03-25 By: mpichler

Figure No.

9

Title

Sediment Sample Locations Nickel Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-16
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

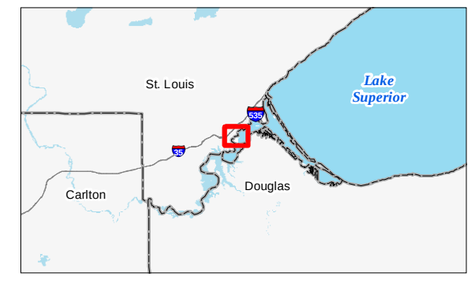
Nickel Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
23 mg/kg	49 mg/kg



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc. Engineers • Surveyors • Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroman\St Louis River$\nickel_location_Nickel_overview.mxd Revised: 2015-03-25 By: mmichler

Figure No.

10

Title

Sediment Sample Locations Percent Moisture Results

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-26
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

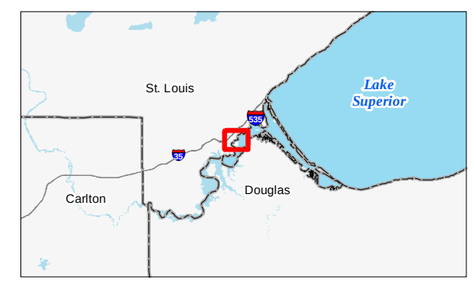
Approximate Project Location

Percent Moisture Result

- No Sample
- 0-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1193\active\193702726\07_ArcMap\SedimentMap\mxd\St Louis River-SampleLocation_Moisture_overview.mxd Revised: 2015-03-25 By: mpichler

Figure No.

11

Title

Wood Waste Description Map

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-01-06
Technical Review by XXX on 2015-XX-XX
Independent Review by XXX on 2015-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

Sample Location - 2014 Stantec

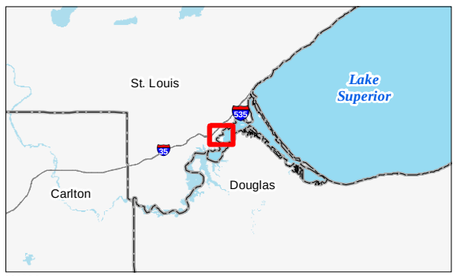
- Wood Pieces
- Wood Pulp
- Trace Wood
- No Wood

Sample Location - 2014 USACE

- Wood Pieces
- Trace Wood
- No Wood

Sample Location - 2010 Fond du Lac RMD, US EPA, USFWS

- Wood Pieces
- Wood Pulp
- Trace Wood



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, USACE, Fond du Lac Resource Management Department, USFWS, US EPA, Esri
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1193\active\193702726\07_analysis\Sediment\Mapping\St Louis River\Sample Location Woodchips overview multiSources.mxd Revised: 2015-03-23 By: mcphe

Figure No.
12

Title
Sediment Sample Locations PCB Results (Aroclor 1260)*

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-26
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

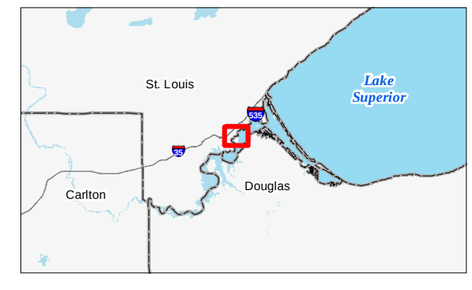
Approximate Project Location

PCB Result
- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons
- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

*Levels of Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1262, and 1268 were also analyzed but were not detectable in any of the samples

Total PCBs (MacDonald et al. 2000)	
Level I	Level II
60 ug/kg DW	680 ug/kg DW



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroquin\St Louis River$\sm-sediment-location-PCB_overview.mxd Revised: 2014-03-25 By: mpitcher

Figure No.
13

Title
Sediment Sample Locations
Total PAHs Results

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-26
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

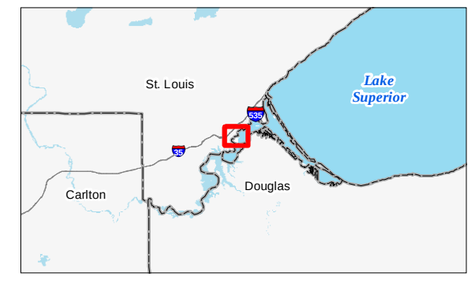
Total PAHs Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (MacDonald et al. 2000)	
Level I	Level II
1600 ug/kg	23000 ug/kg



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aerial\St Louis River Sediment location PAH overview.mxd Revised: 2015-03-25 By: mmichler

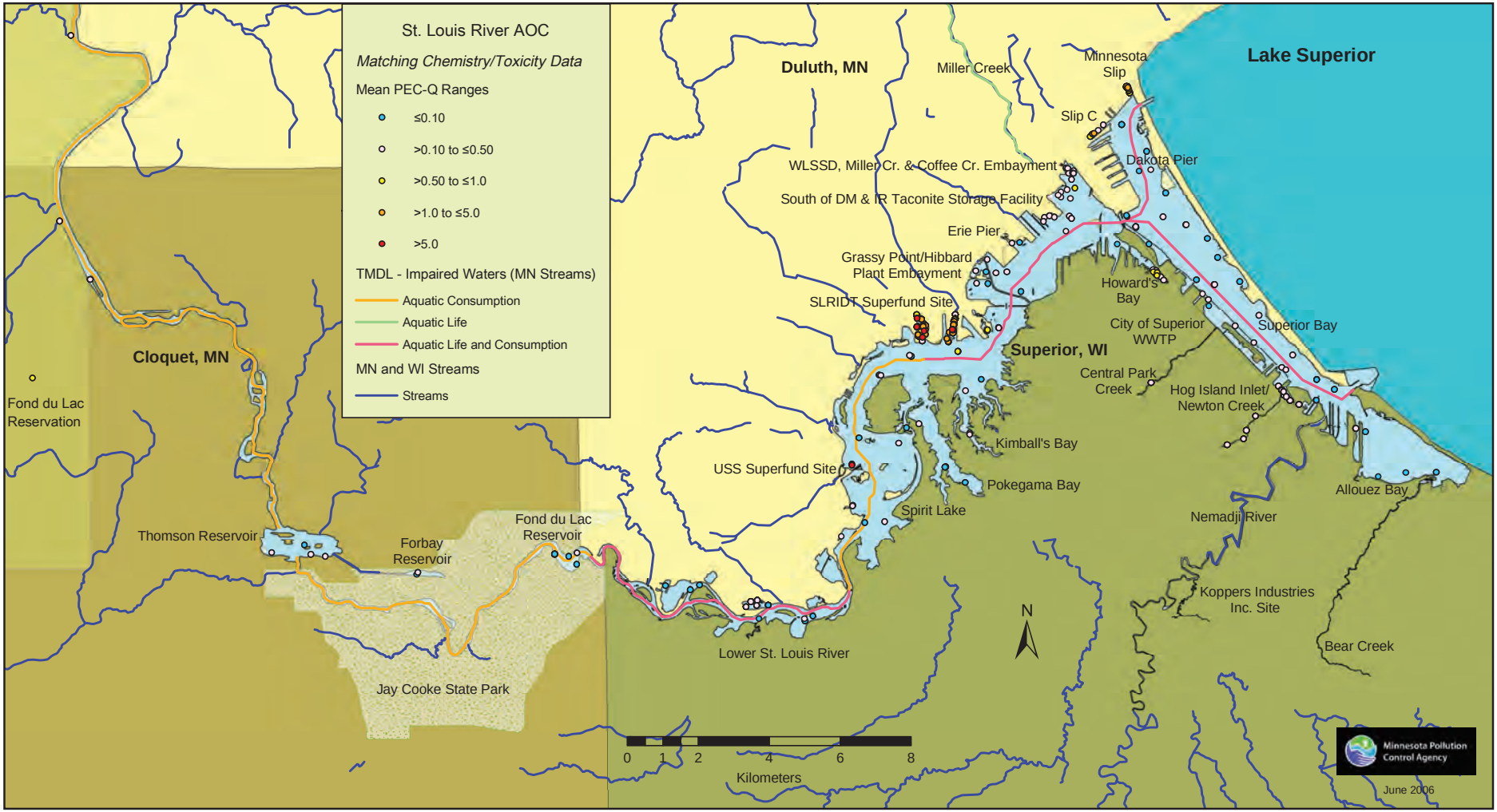


Figure 14 Distribution of mean PEC-Q ranges used in the incidence of sediment toxicity analysis of matching sediment chemistry and toxicity data from the St. Louis River AOC.

Figure No.
15

Title
Sediment Sample Locations Mean PEC-Q (Metals and PAH)

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-01-16
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend
- Approximate Project Location

Mean PEC-Q Result
- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons
- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
0.1	0.6

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers • Surveyors • Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Figure No.

16

Title

Sediment Sample Locations
Mean PEC-Q (Metals, PAH, PCB)

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-01-16
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

Approximate Project Location

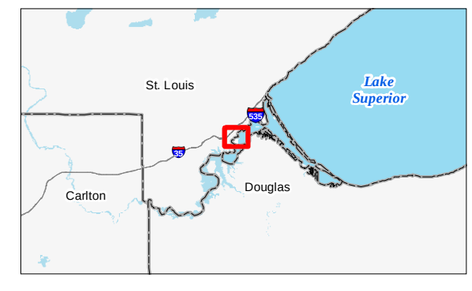
Mean PEC-Q Result

- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons

- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
0.1	0.6



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aroman\St Louis River$\mmpl\location_PEC-Q All_overview.mxd Revised: 2015-03-25 By: mmichler

Figure No.
17

Title
Sediment Sample Locations
Mean PEC-Q (Metals, PAH, PCB [.5MDL])

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-01-16
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

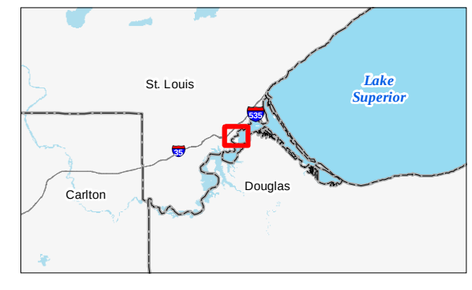
N

Legend
- Approximate Project Location

Mean PEC-Q Result
- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Layered points represent collections at different sediment horizons
- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

MN SQTs (Crane et al. 2000, 2002)	
Level I	Level II
0.1	0.6

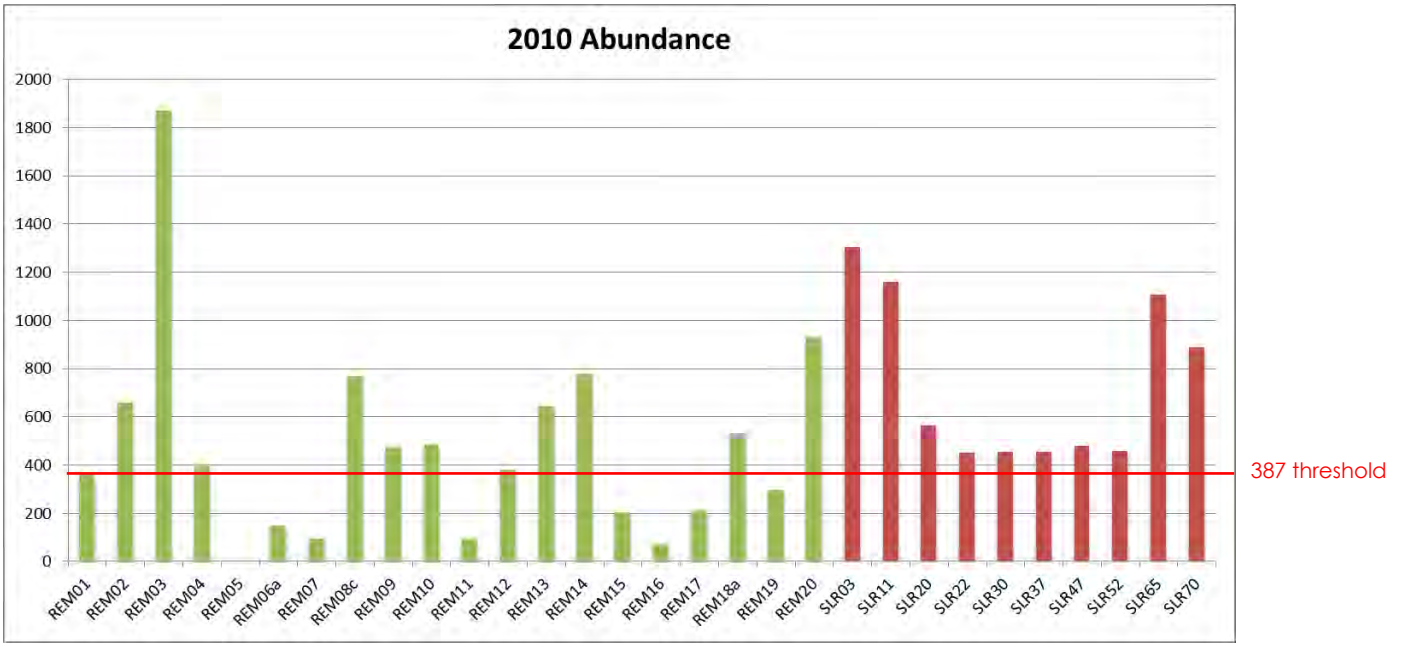


Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-data\mxds\Sediment\Aerial\St Louis River\Sediment location_PEC-Q_All_MDL_overview.mxd Revised: 2015-03-23 By: mmichler



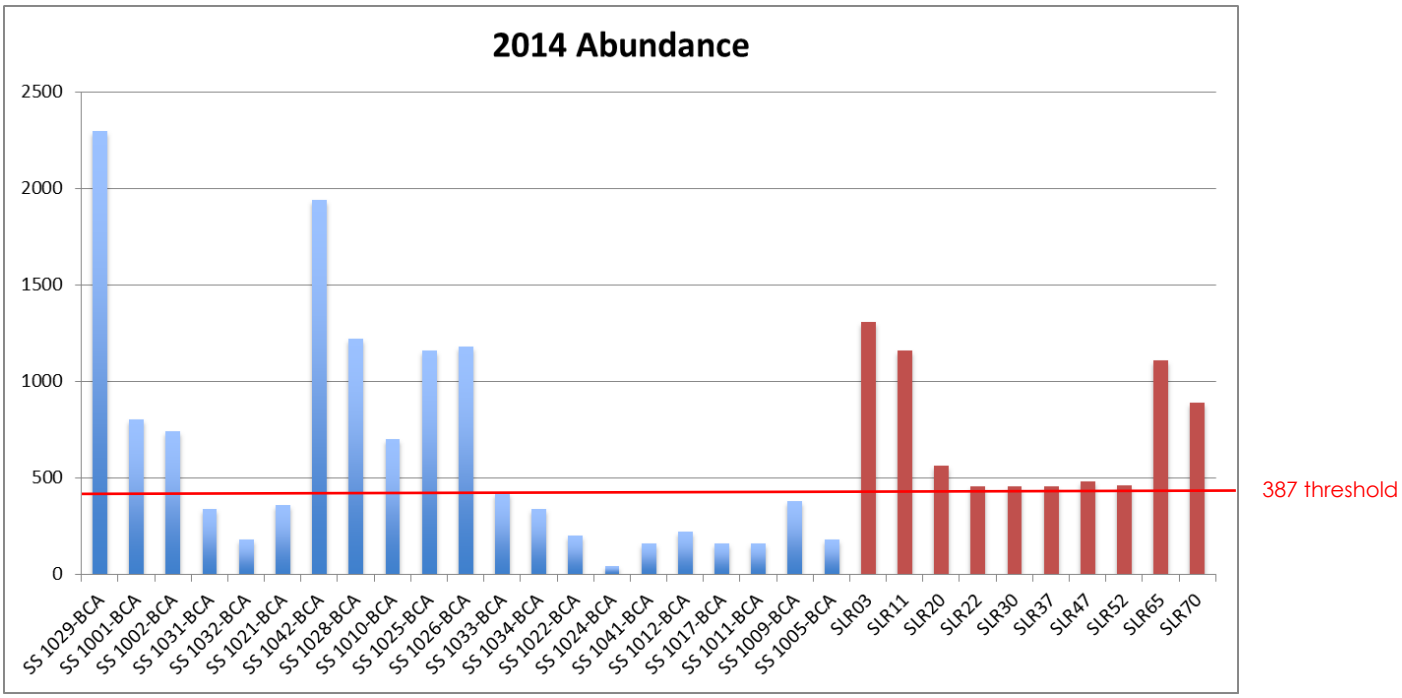


Figure 18. Comparison of Macroinvertebrate Abundance (2010 with SLR Reference Stations and 2014) for 40th Avenue Project.

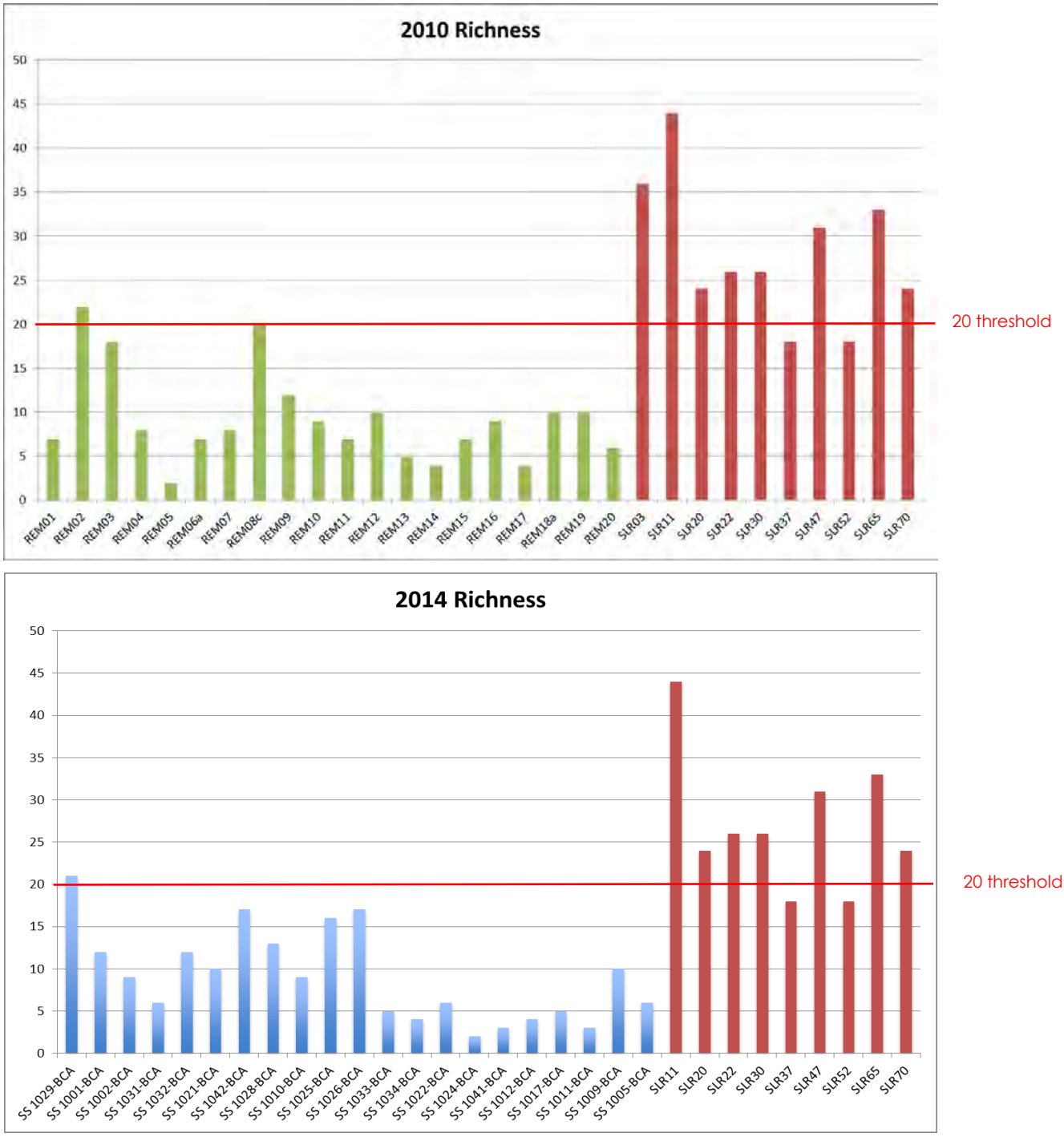


Figure 19. Comparison of Macroinvertebrate Species Richness (2010 with SLR Reference Sites and 2014) for 40th Avenue Project.

Figure No.

20

Title

Shannon-Wiener Index by Sample Location

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-19
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

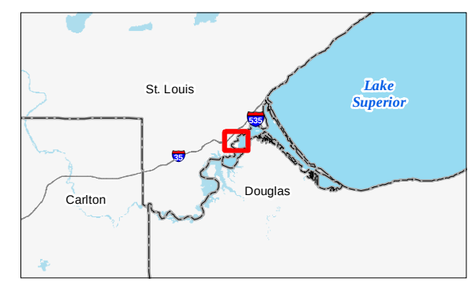
Approximate Project Location

ShannonWiener / none

- 0.000-1.000
- 1.001-1.500
- 1.501 - 2.000
- 2.001 or greater

Data from 2010 has yellow labels and data from 2014 has white labels

	0.000-1.000	1.001-1.500	1.501-2.000	≥2.001
2010 (# of Stations)	2	12	6	0
2014 (# of Stations)	3	3	6	9



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

X:\193\active\193702726\07_ais\mxds\Macroinvert Maps\mxds\St Louis River Macro ShannonWiener.mxd Revised: 2015-03-23 By: mmichler

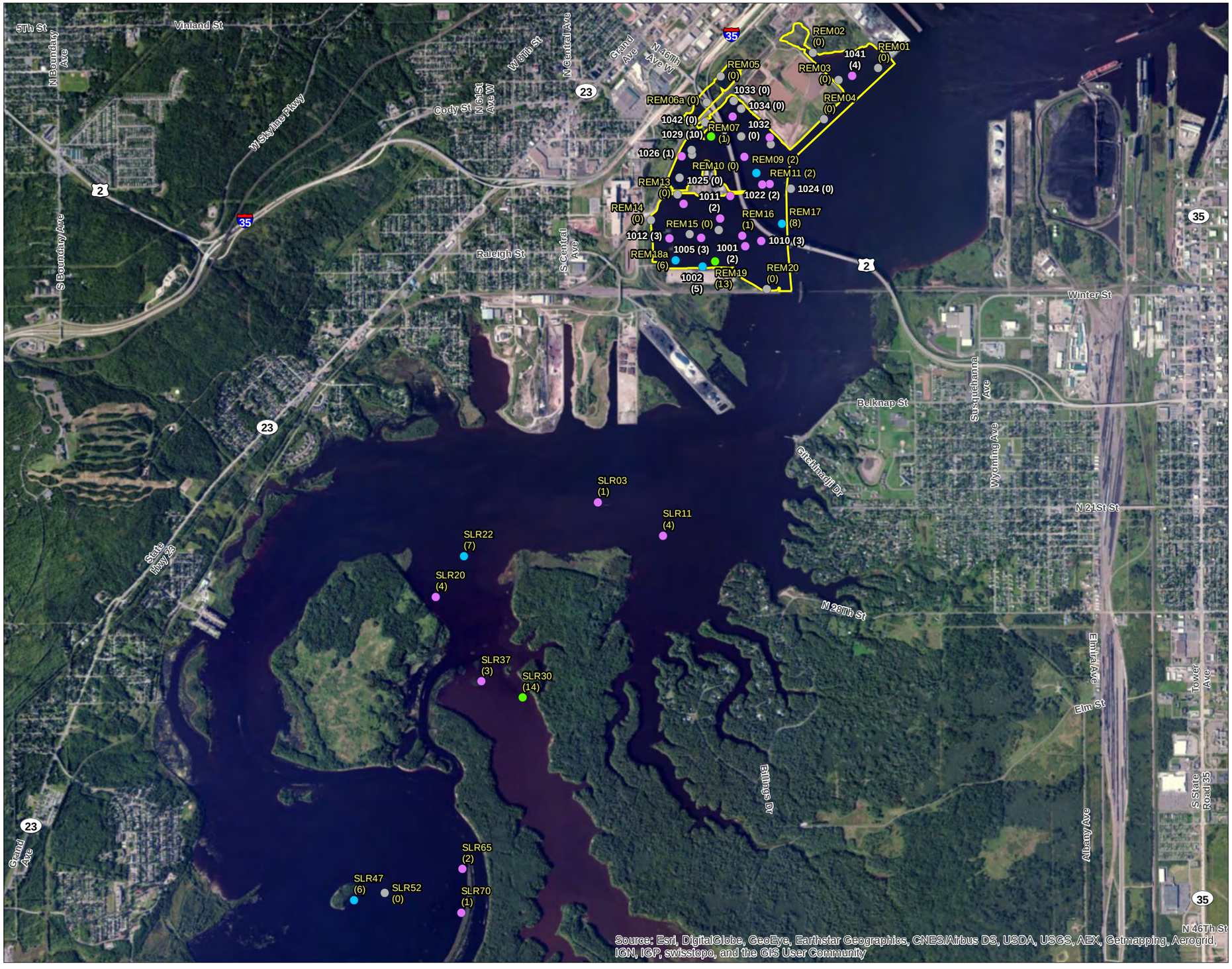


Figure No.
21a

Title
Hexagenia Sample Locations 2010 and 2014 Data

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-18
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 1,250 2,500 Feet
1:30,000 (At original document size of 11x17)

N

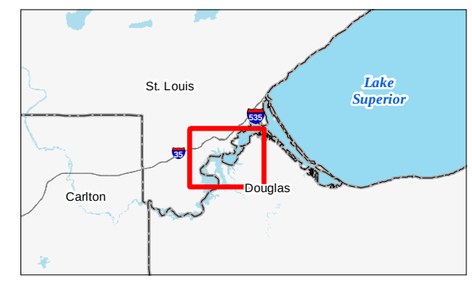
Legend

Approximate Project Location

Number of Hexagenia (amount in label)

- None
- 1-4
- 5-9
- 10-14

Data from 2010 has yellow labels and data from 2014 has white labels



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-drafting\Macrovert-Magnum\StLouis_River_Marco_Hexagenia_All.mxd Revised: 2015-03-23 By: mpichler

Figure No.
21b

Title
Hexagenia Sample Locations 2010 and 2014 **40th Avenue Project Site**

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-18
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

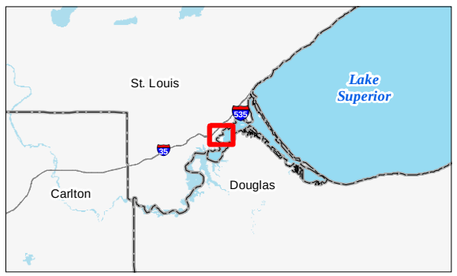
Approximate Project Location

Number of Hexagenia (amount in label)

- None
- 1-4
- 5-9
- 10-14

Data from 2010 has yellow labels and data from 2014 has white labels

	0-4	5-9	≥10
2010 (# of Stations)	17	2	1
2014 (# of Stations)	18	2	1



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07_results\Macroinvert_Mapping\St Louis River Macro Hexagenia.mxd Revised: 2015-03-23 By: mpichler

Figure No.

22

Title

EPT Index by Sample Location

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-19
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

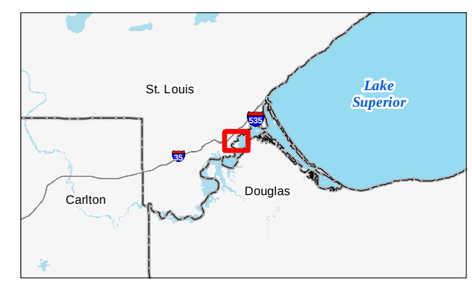
Approximate Project Location

EPT Index

- 0.000-0.250
- 0.251-0.500
- 0.501 - 0.750
- 0.751 - 1.000

Data from 2010 has yellow labels and data from 2014 has white labels

	0.000-0.250	0.251-0.500	0.501-0.750	0.751-1.000
2010 (# of Stations)	18	1	0	0
2014 (# of Stations)	10	7	2	2



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc. Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\193702726\07-data\mxds\Macoutreat Magnum\St Louis River Macro EPT.mxd Revised: 2015-03-23 By: mpichler

Figure No.
23

Title
Abundance by Sample Location

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-19
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

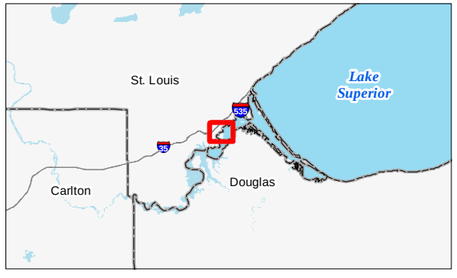
Approximate Project Location

Abundance per m²

- 0-250
- 251-500
- 501-750
- 751-1000
- 1001-1250
- 1251 or more

Data from 2010 has yellow labels and data from 2014 has white labels

	0-250	251-500	500-1000	≥1001
2010 (# of Stations)	7	6	6	1
2014 (# of Stations)	8	5	3	5



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\193726\active\193702726\07-gis\maps\Macrohvert Mapping\St Louis River Macro Abundance.mxd Revised: 2015-03-23 By: mmschlier

Figure No.
24

Title
Species Richness by Sample Location

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-19
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

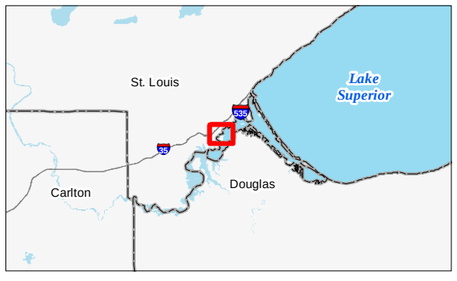
Legend

Approximate Project Location

Species Richness
- 2-4
- 5-9
- 10-14
- 15 or higher

Data from 2010 has yellow labels and data from 2014 has white labels

	2-4	5-9	10-14	≥15
2010 (# of Stations)	3	10	4	3
2014 (# of Stations)	5	7	5	4



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

X:\193\active\193702726\07_data\mxds\Macroinvert Mapping\St Louis River Macro Richness.mxd Revised: 2015-03-23 By: mpichler

Figure No.

25

Title

Shannon-Wiener Index by Sample Location

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-03-19
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

Legend

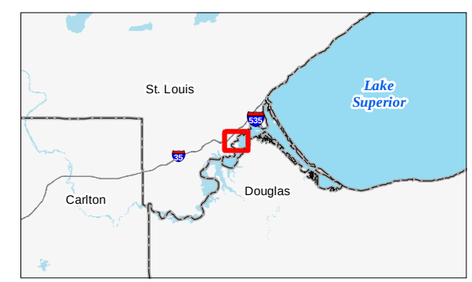
Approximate Project Location

ShannonWiener / none

- 0.000-1.000
- 1.001-1.500
- 1.501 - 2.000
- 2.001 or greater

Data from 2010 has yellow labels and data from 2014 has white labels

	0.000-1.000	1.001-1.500	1.501-2.000	≥2.001
2010 (# of Stations)	2	12	6	0
2014 (# of Stations)	3	3	6	9



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

X:\193\active\193702726\07_gis\mxds\Macroinvert Mapping\St Louis River Macro Shannon Wiener.mxd Revised: 2015-03-23 By: mmichler

Figure No.
26

Title
Sediment Sample Locations
Dioxins and Furans TEQ Results

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-21
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

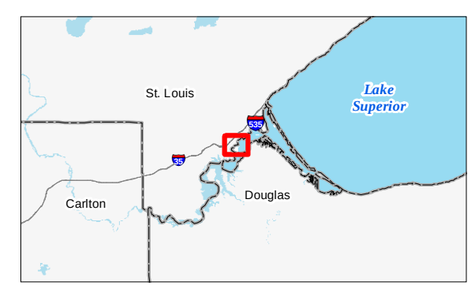
Approximate Project Location

TEQ Result
- No Sample
- Below Level I SQT
- Above Level I SQT
- Above Level II SQT

Wood Type (interval labeled)
- Trace Wood
- Wood Pieces
- Wood Pulp
- No Wood

Layered points represent collections at different sediment horizons
- 0-15cm
- 16-50cm
- 51-100cm
- 101-200cm

TEQ SQT (CCME 1999)	
Level I	Level II
0.85	21.5



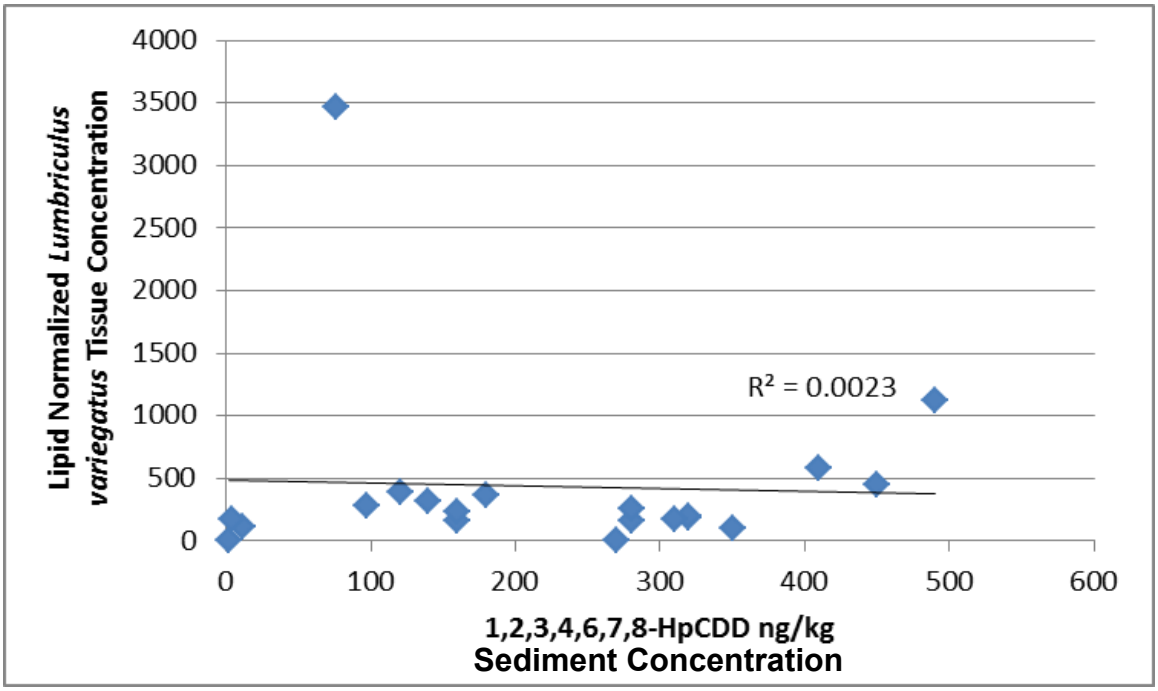
Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07_data\maps\SedimentMap\maps\St. Louis River Sampled Location TEQ Wood overview.mxd Revised: 2014-03-26 By: mschiller

Figures 27. Dioxin and Furan Congener Correlations to Sediment Concentrations within Lipid Normalized *Lumbriculus variegatus* tissues.



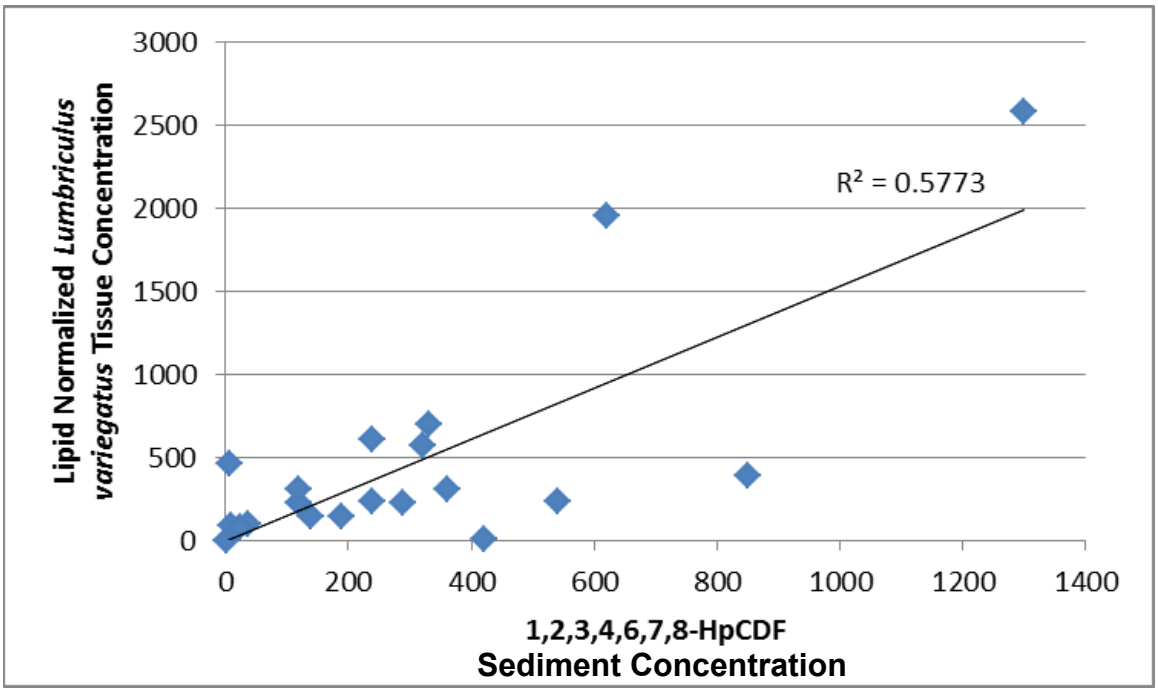
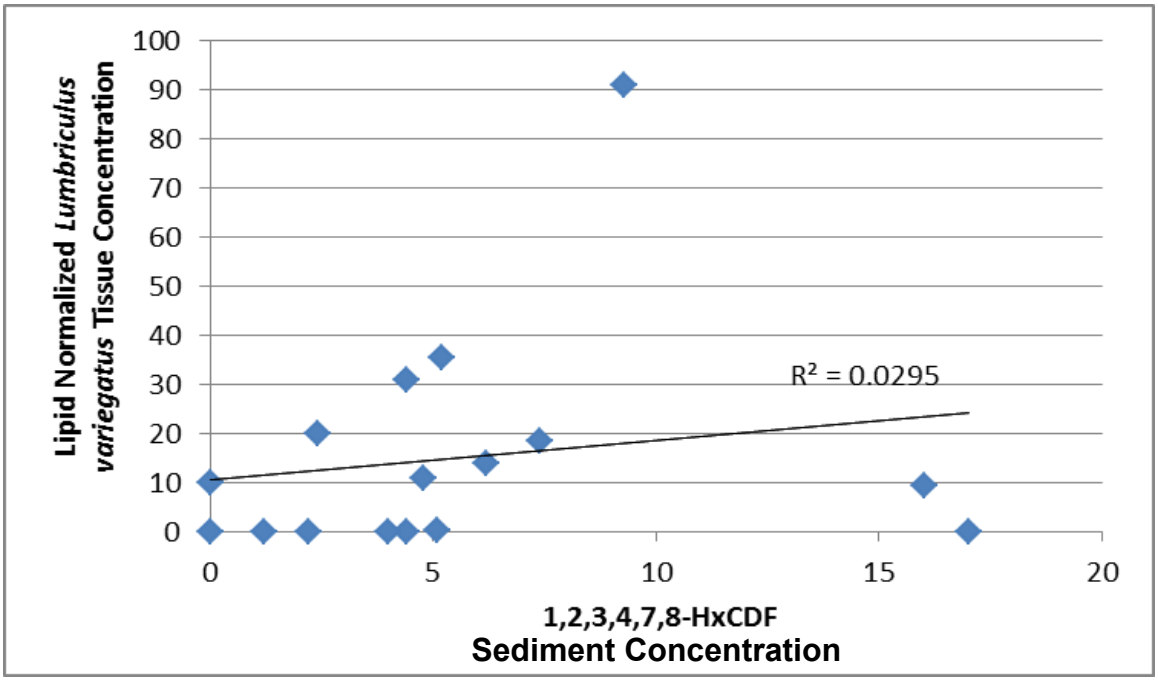


Figure 27 con't



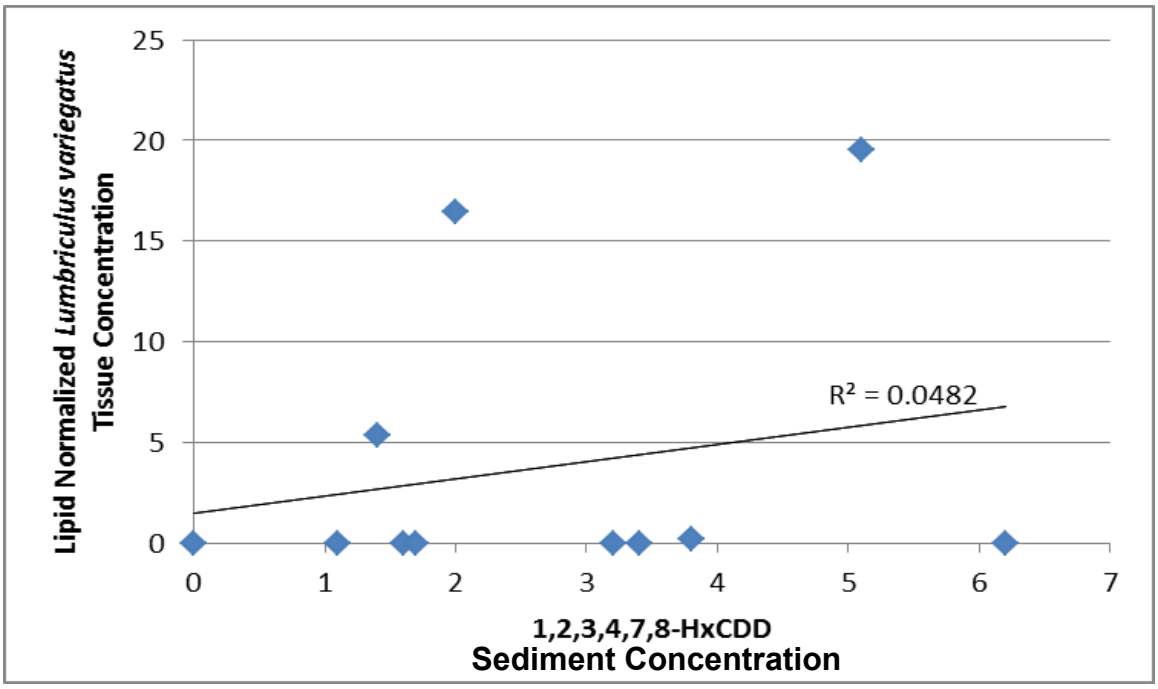
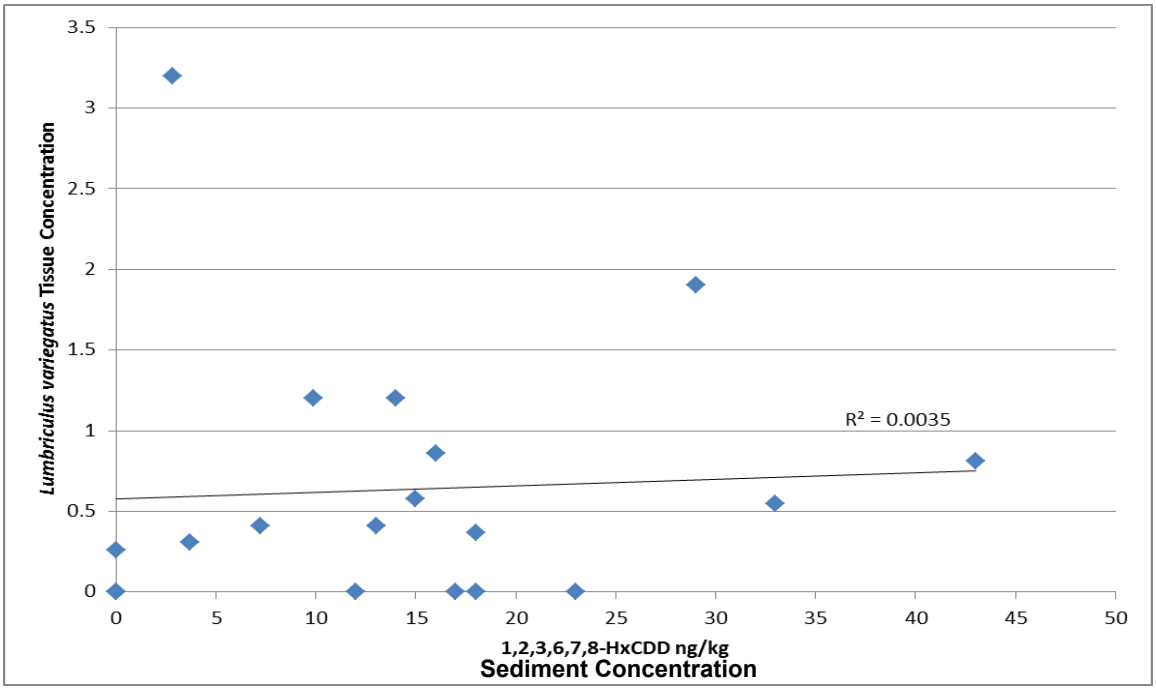


Figure 27 con't



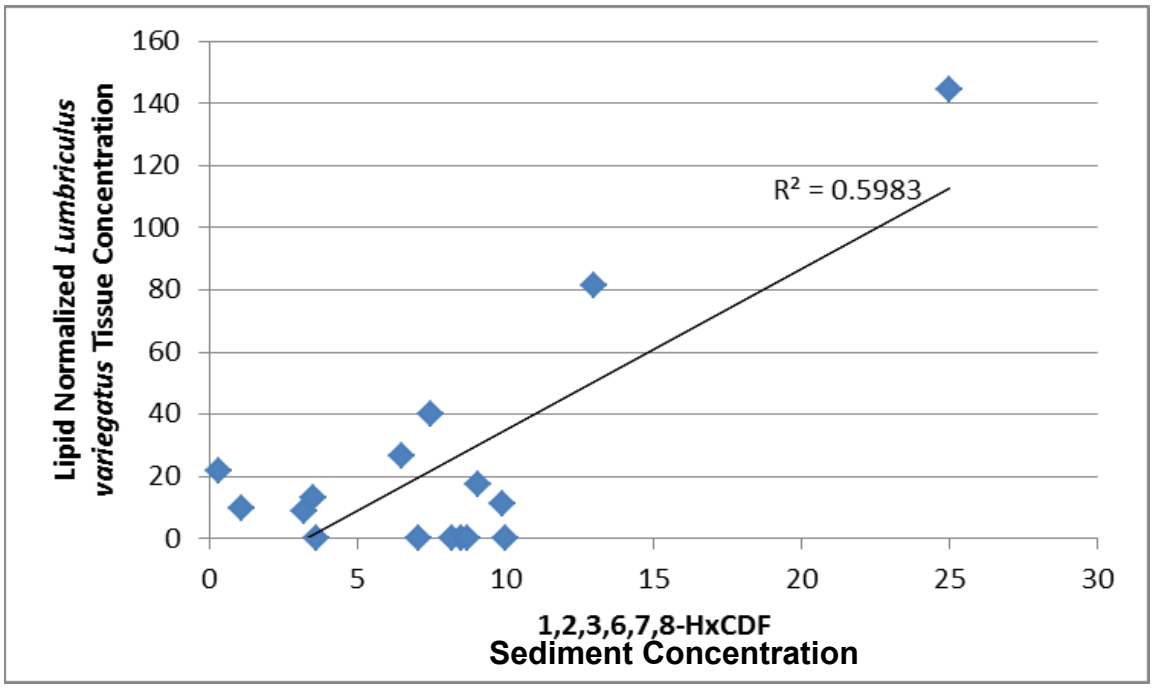
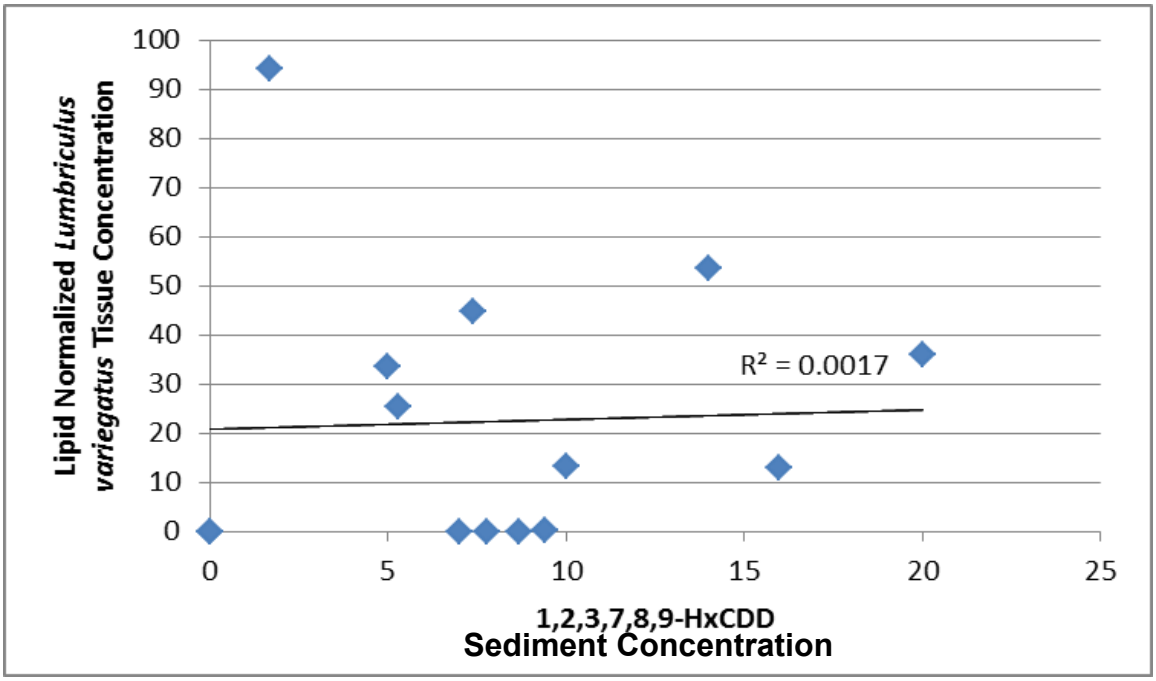


Figure 27 con't



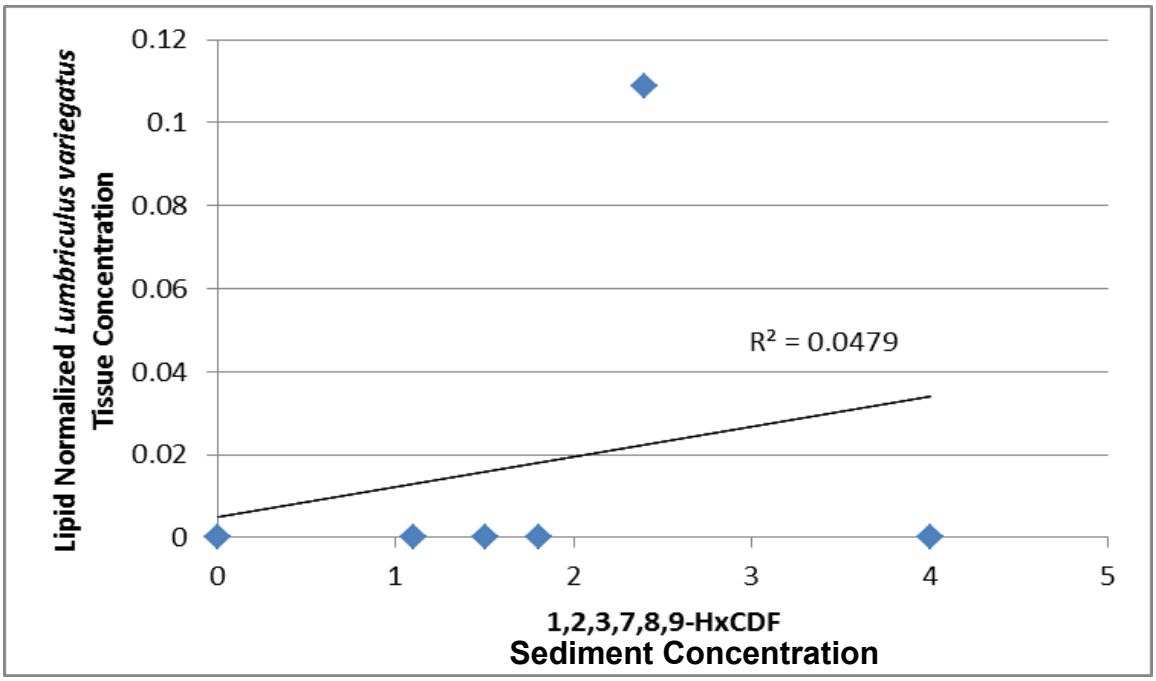
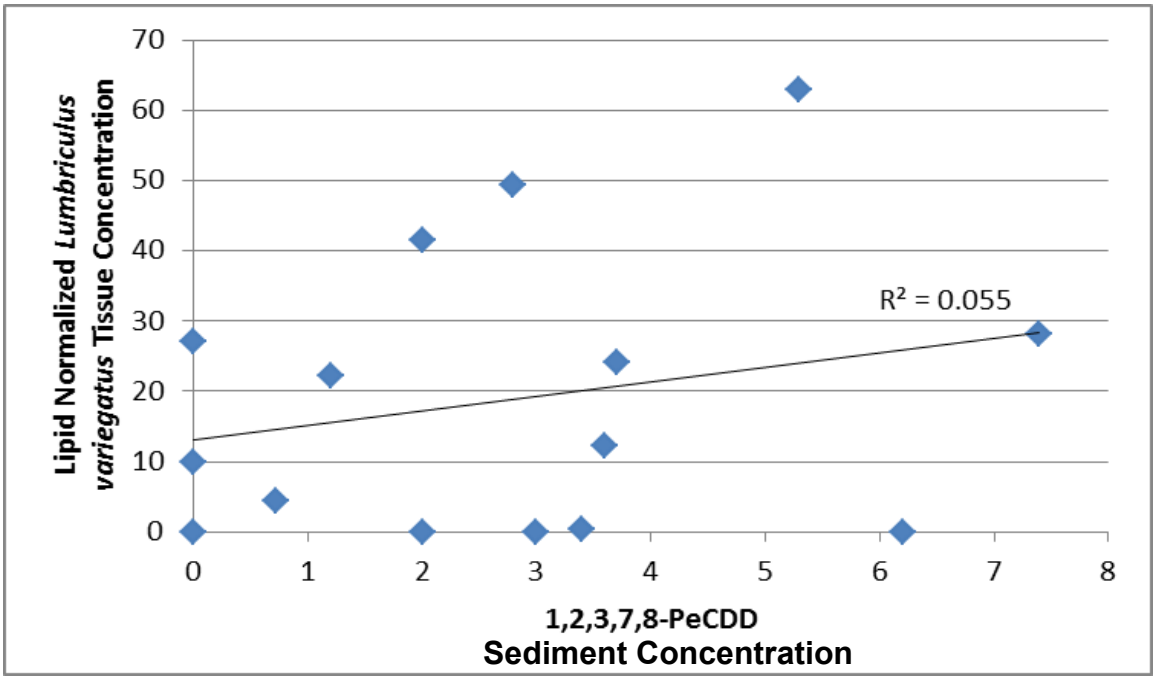


Figure 27 con't



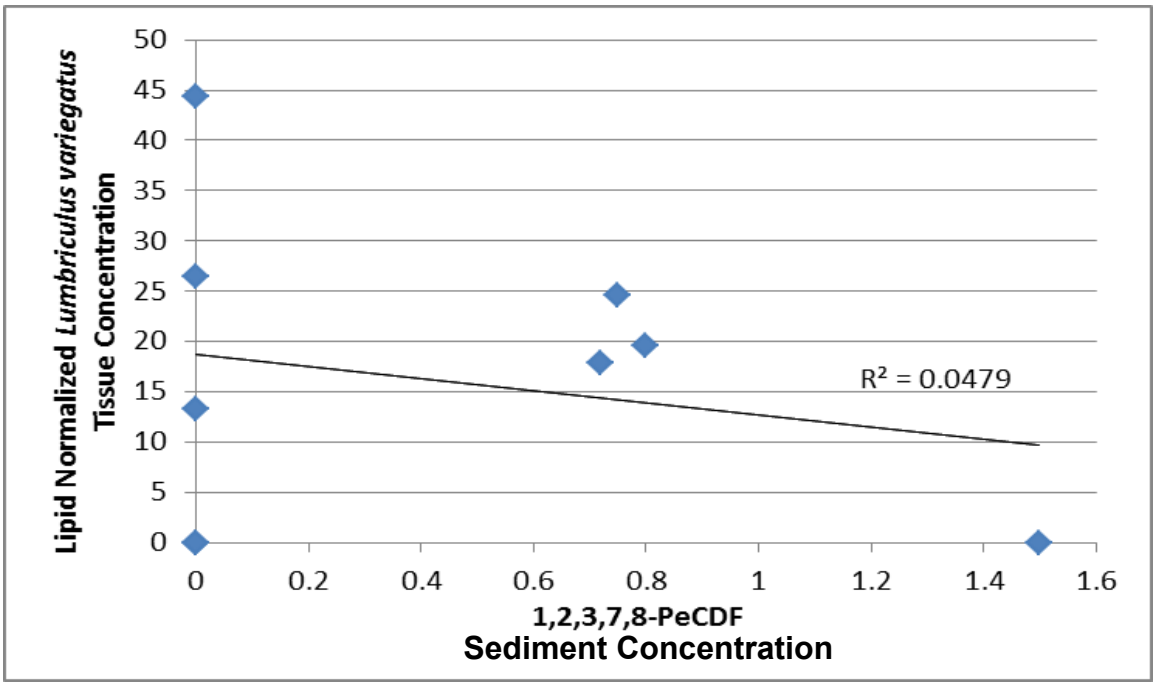
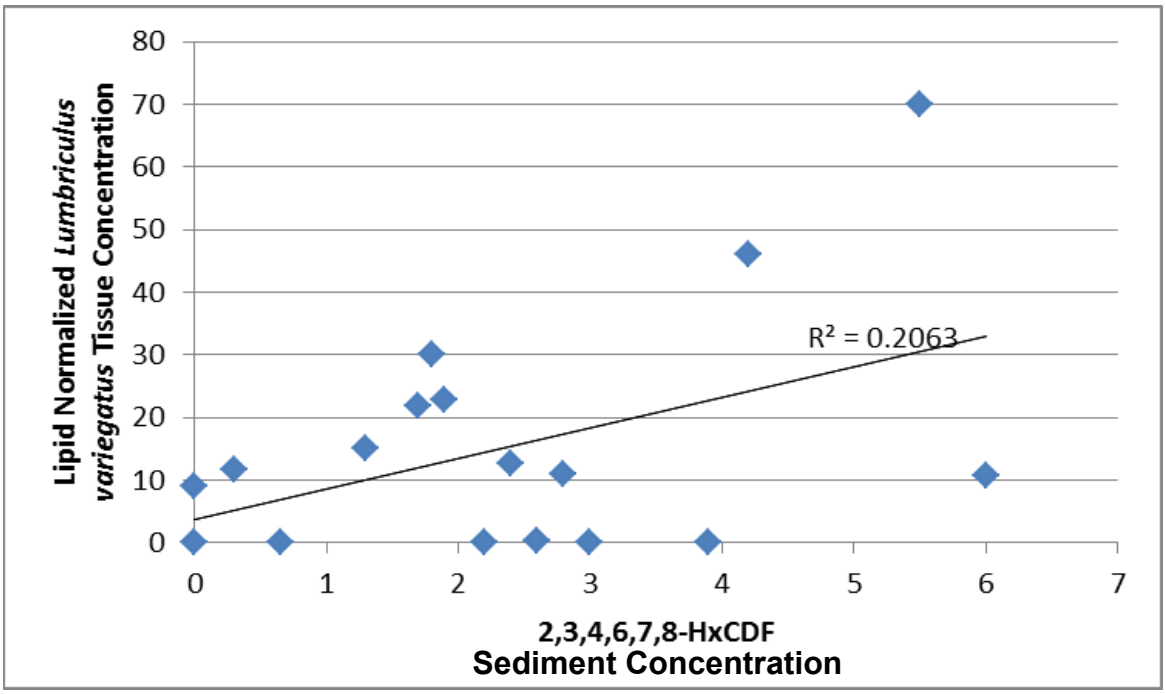


Figure 27 con't



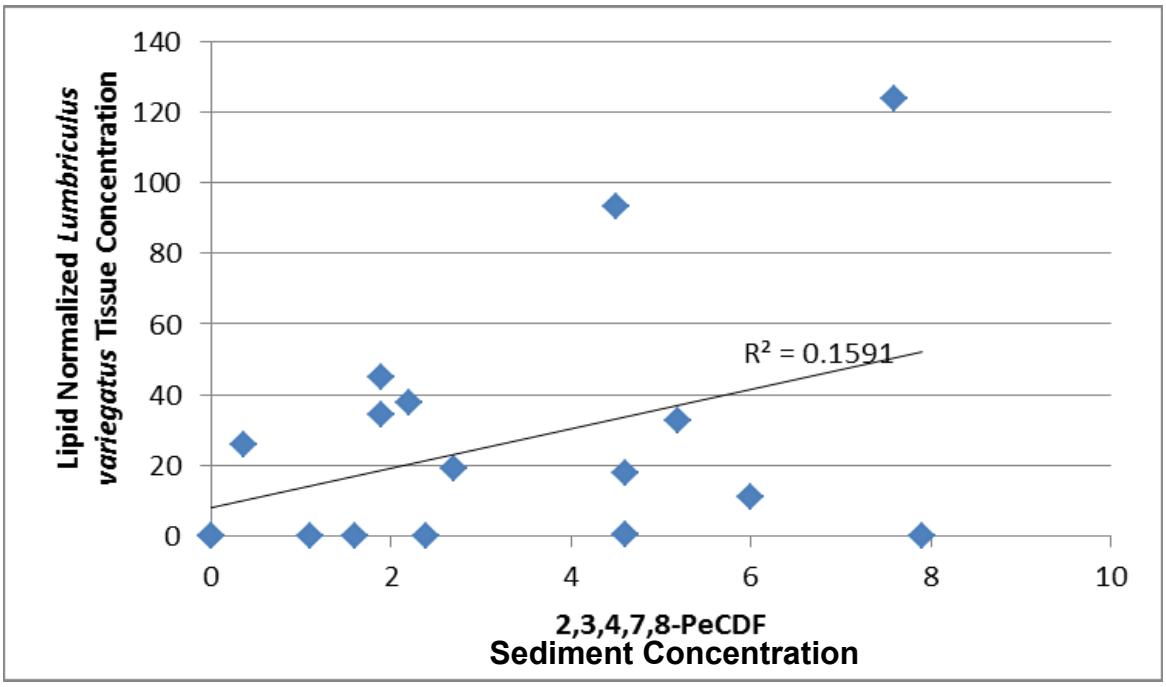
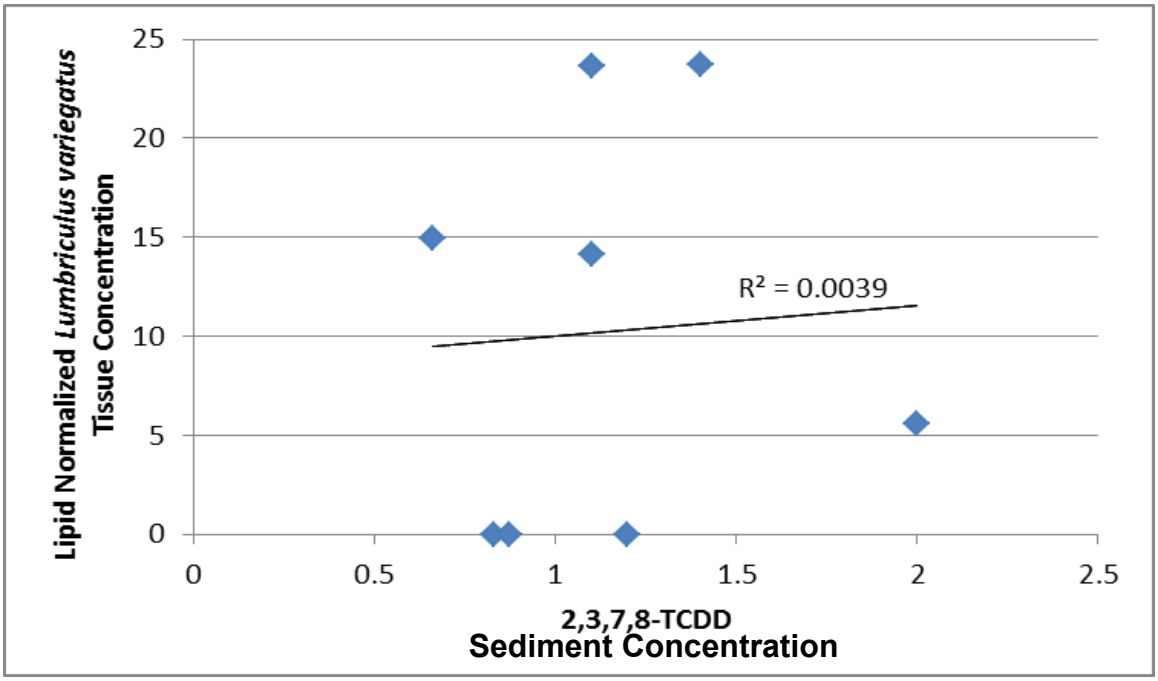


Figure 27 con't



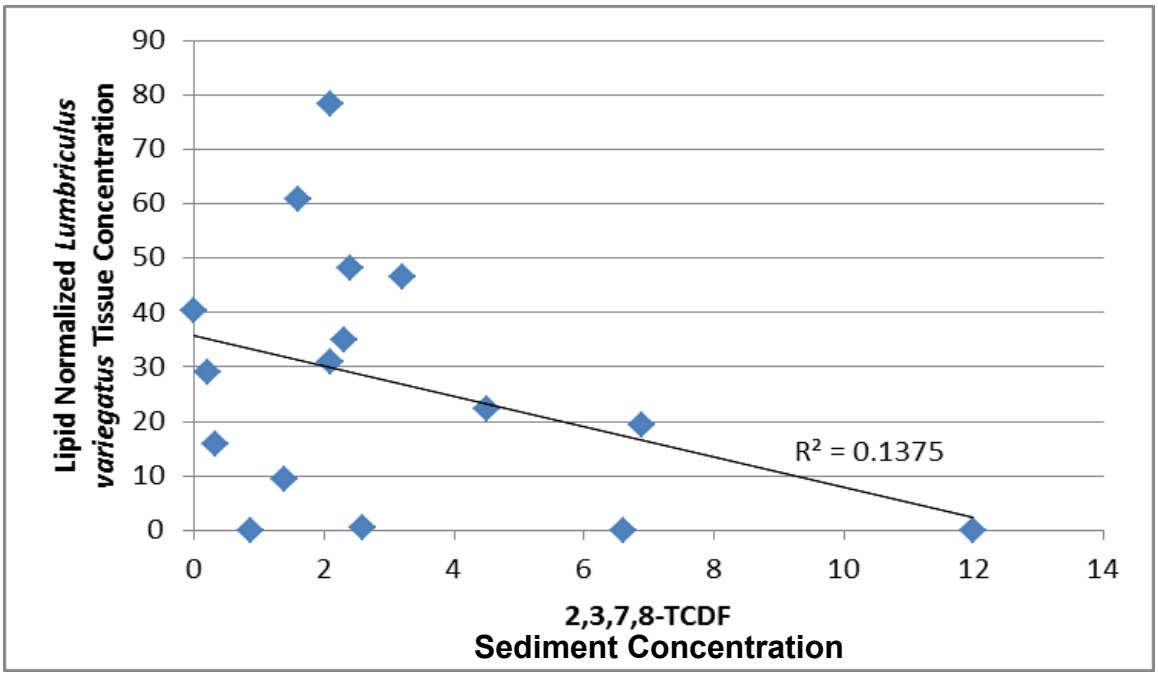
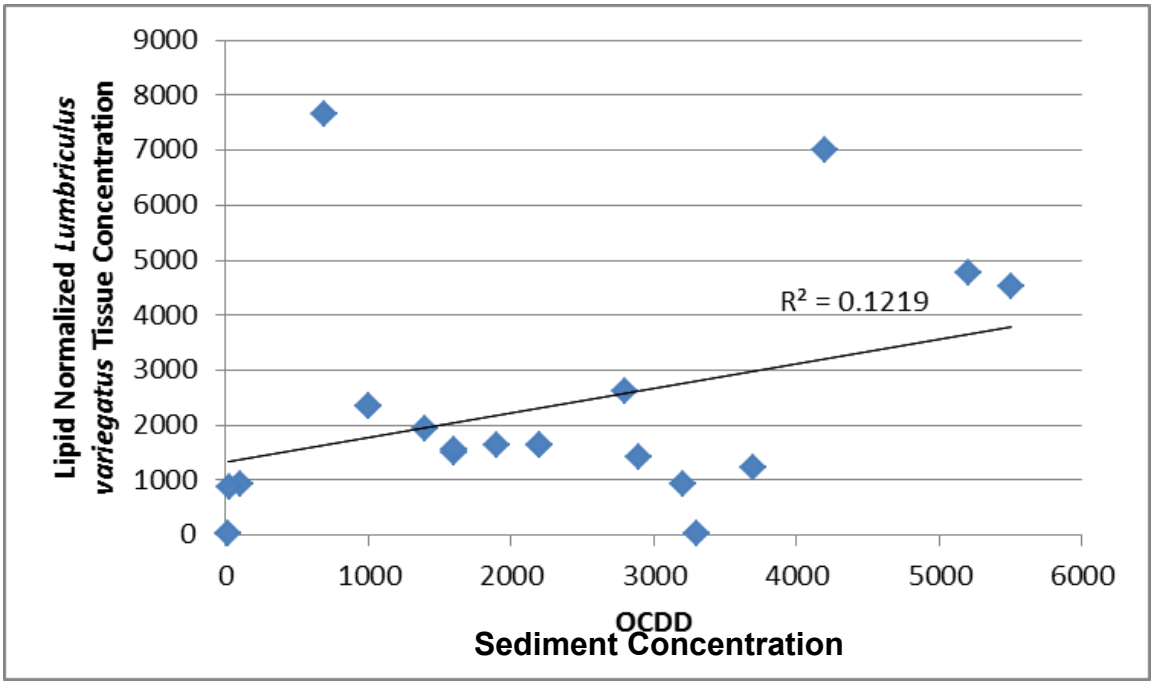


Figure 27 con't



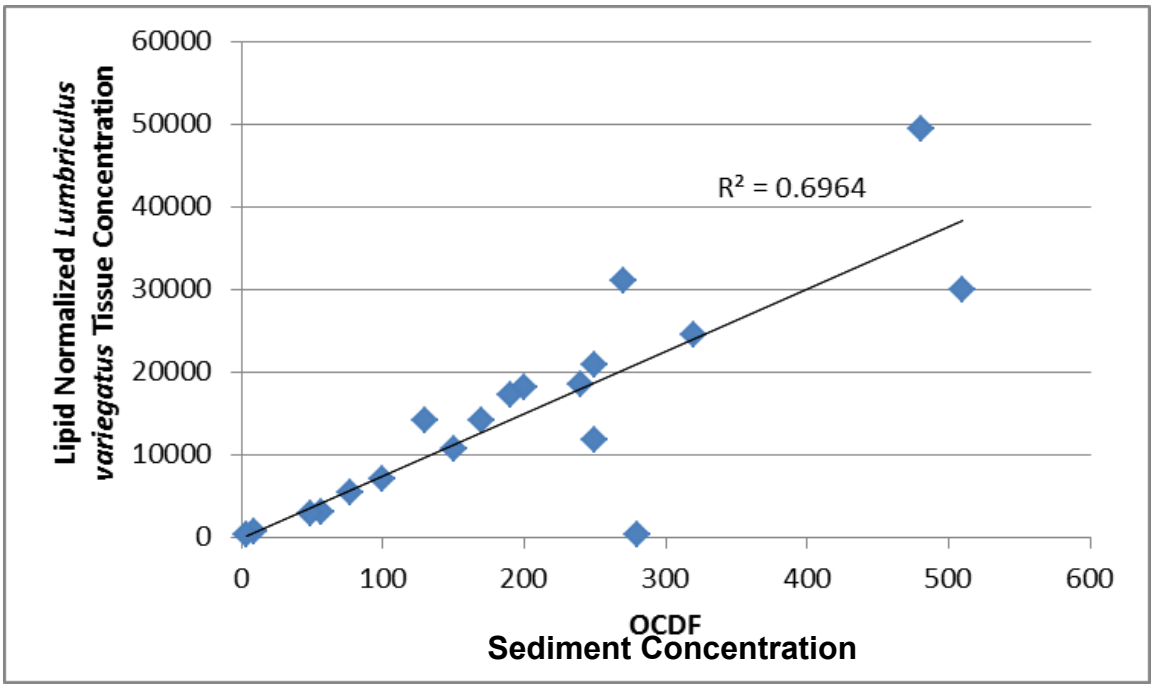
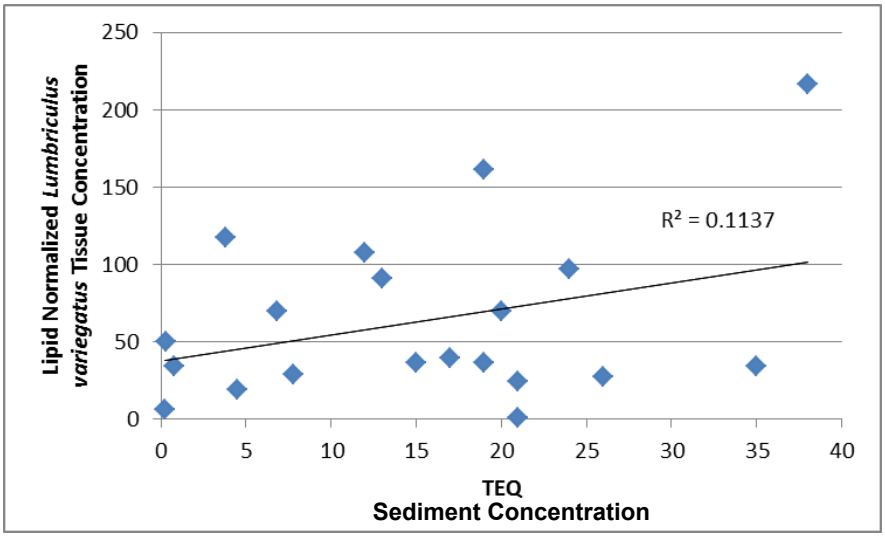
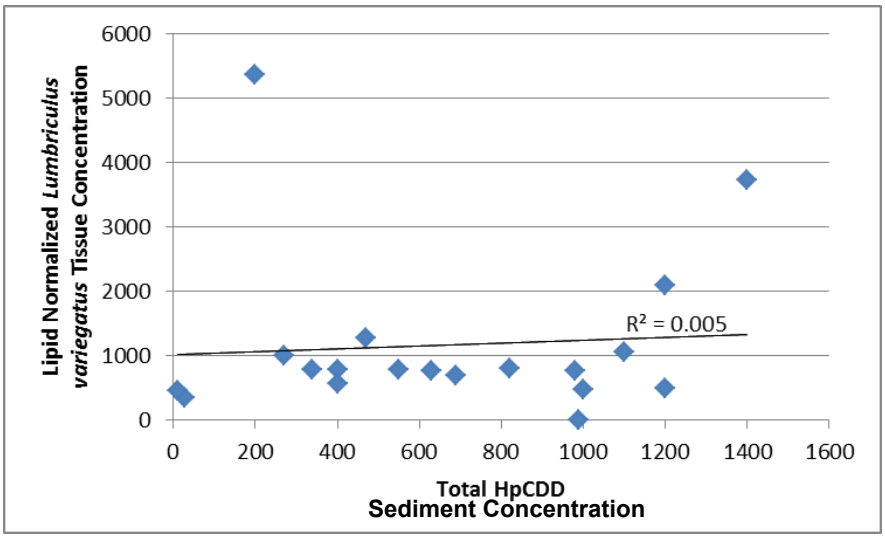


Figure 27 con't





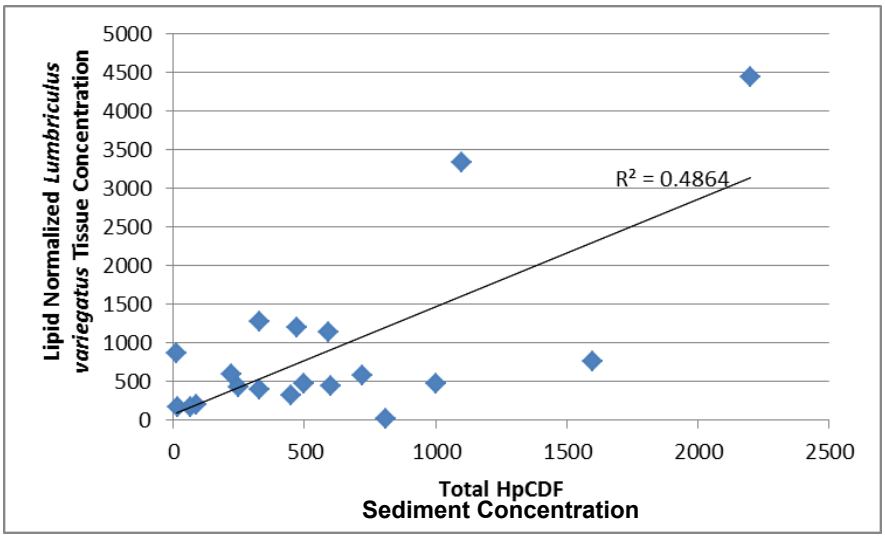
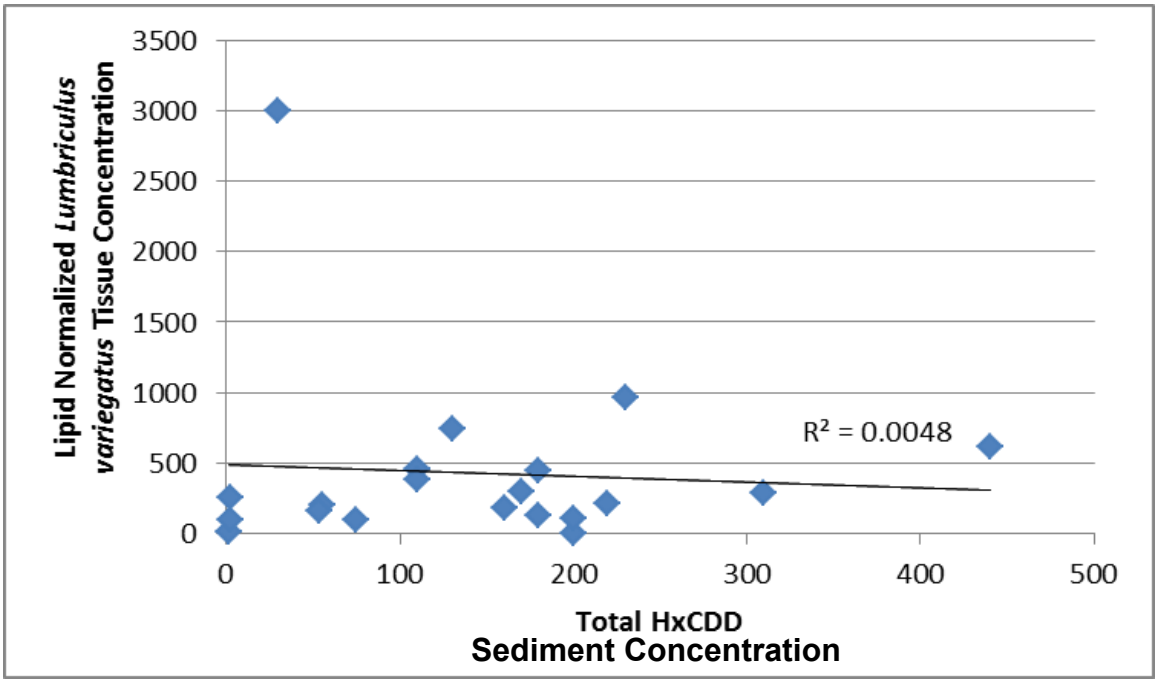


Figure 27 con't



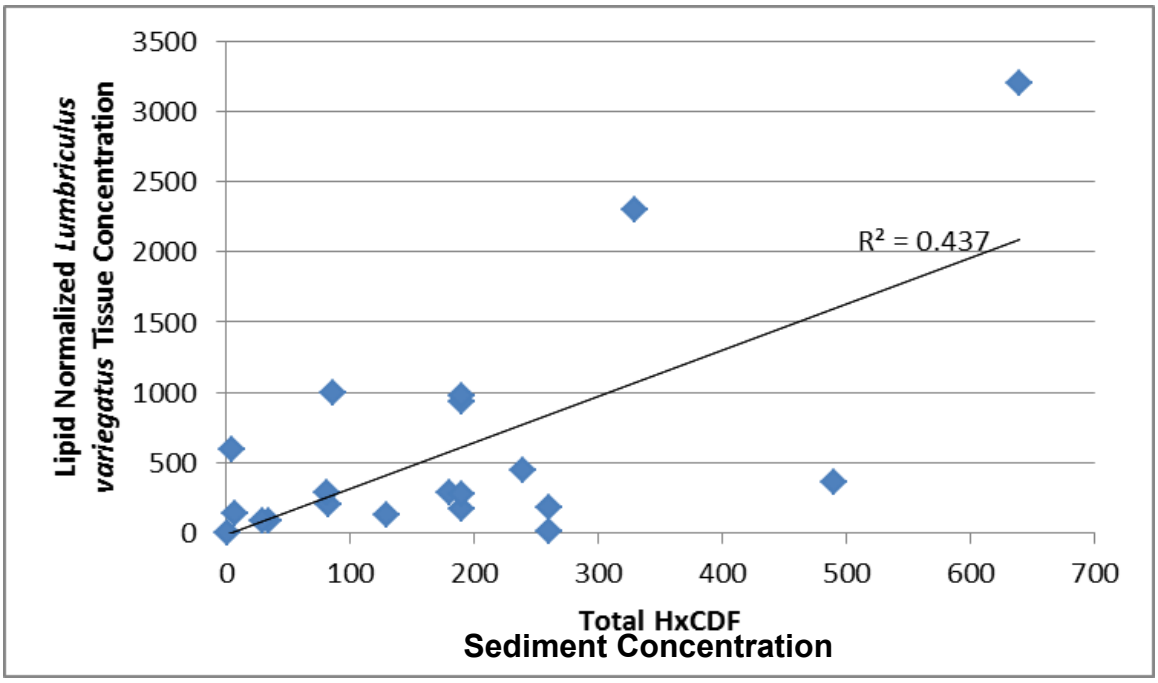
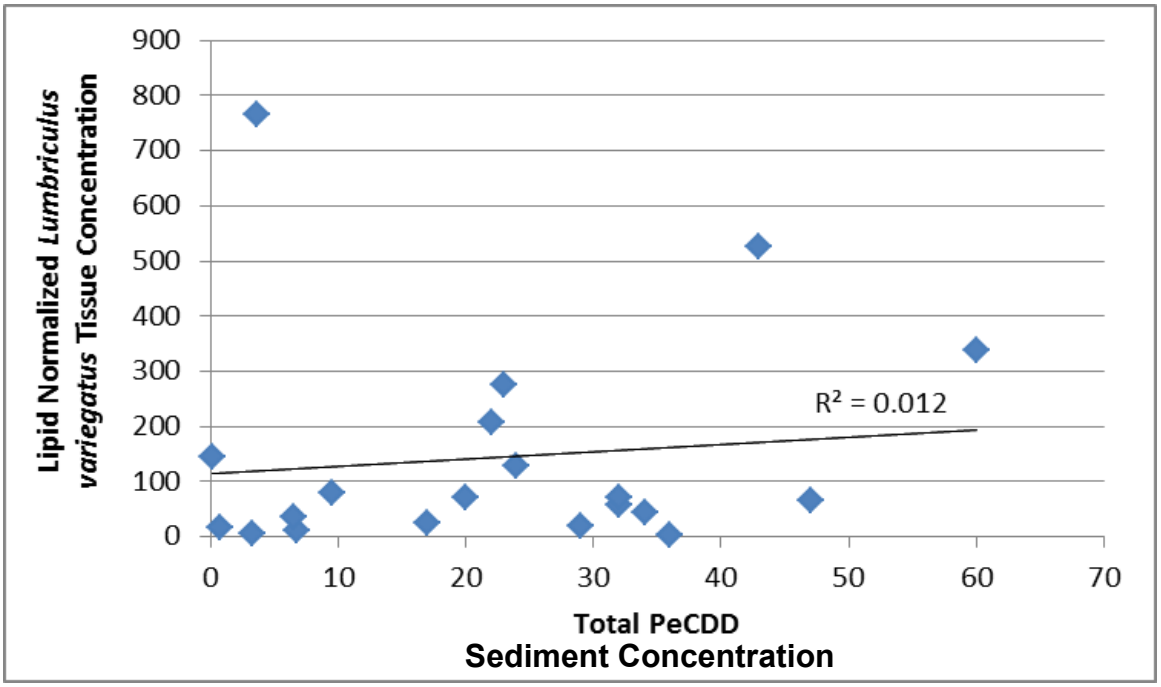


Figure 27 con't



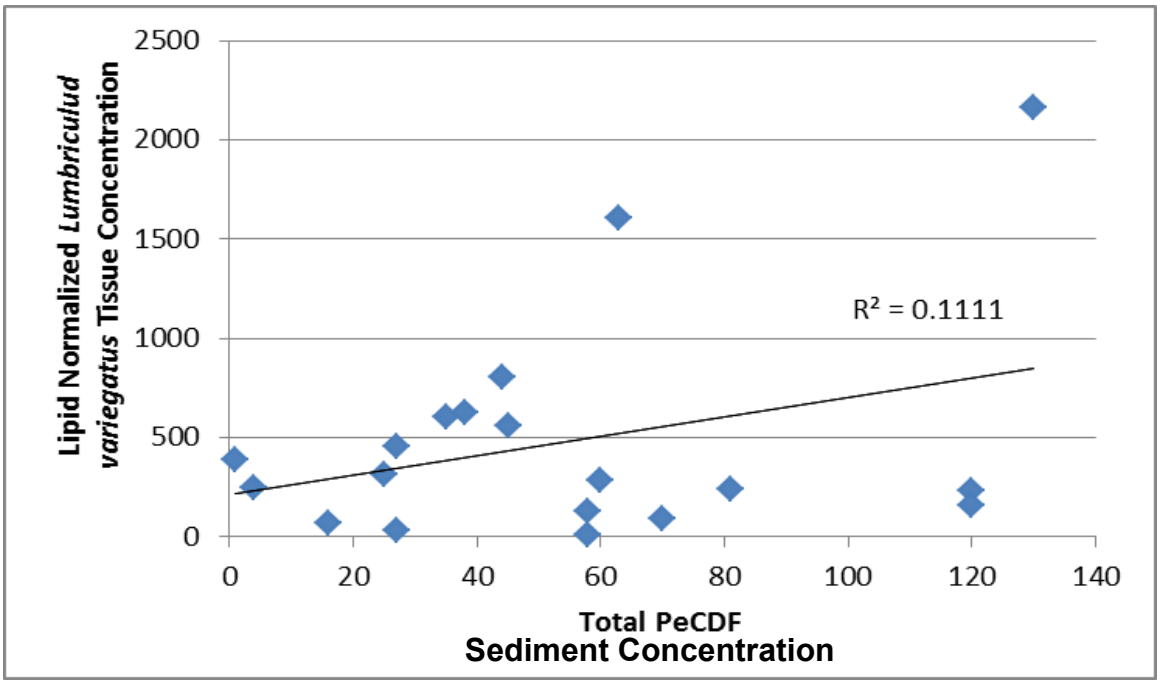
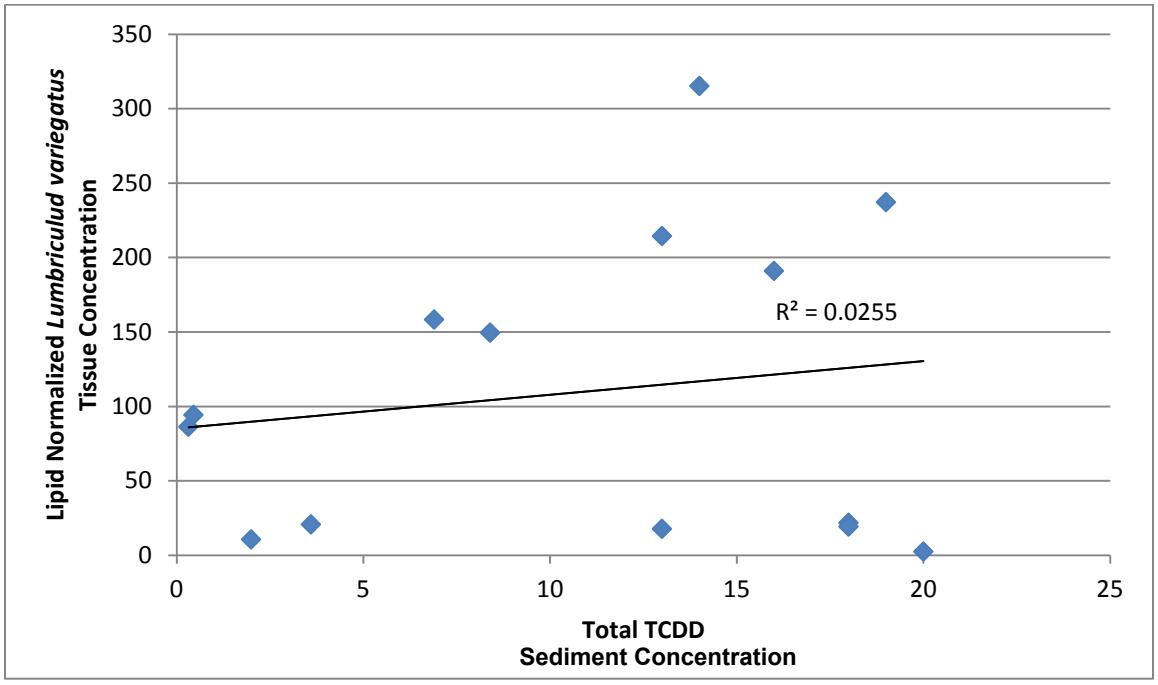


Figure 27 con't



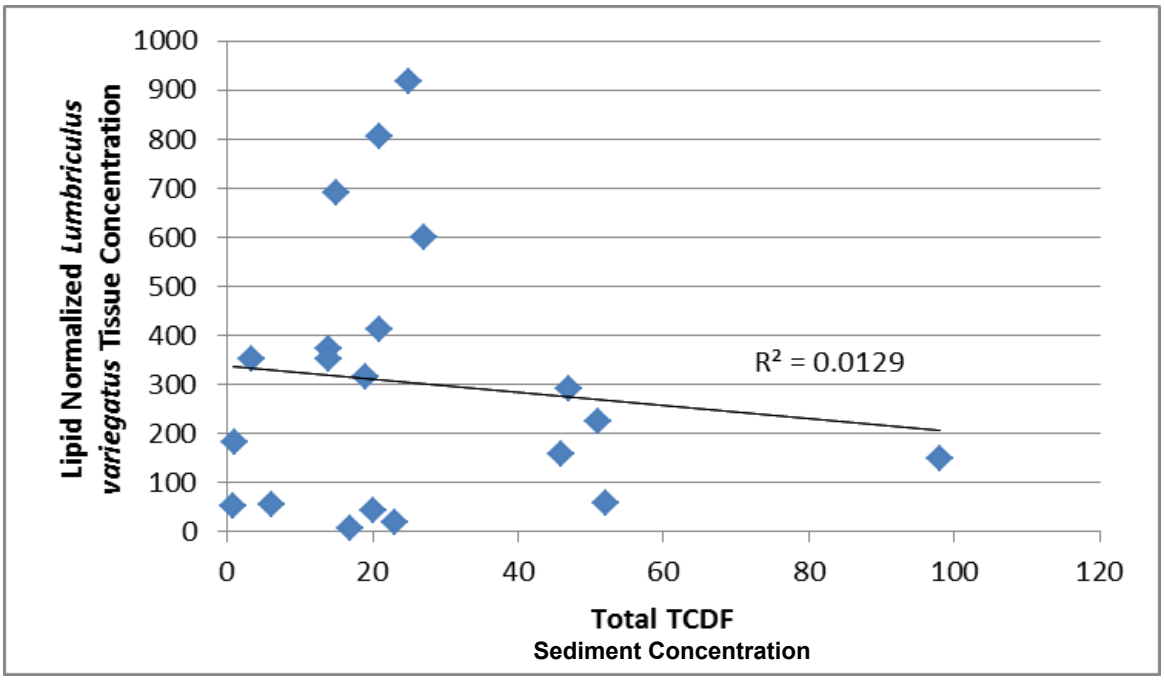


Figure 28

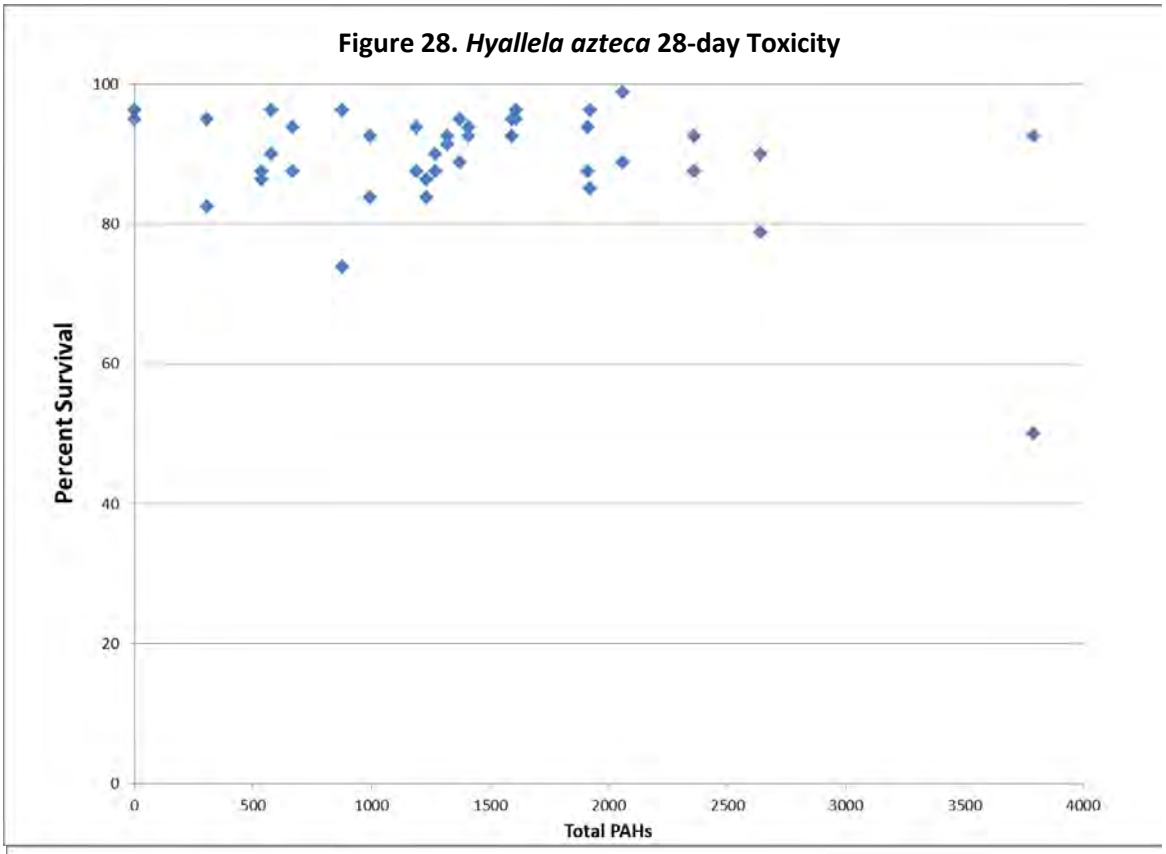


Figure 28. *Hyallela azteca* 28-day Toxicity
Percent Survival
100
80
60
40
20
0
0
500
1000
1500
2000
2500
3000
3500
4000
Total PAHs

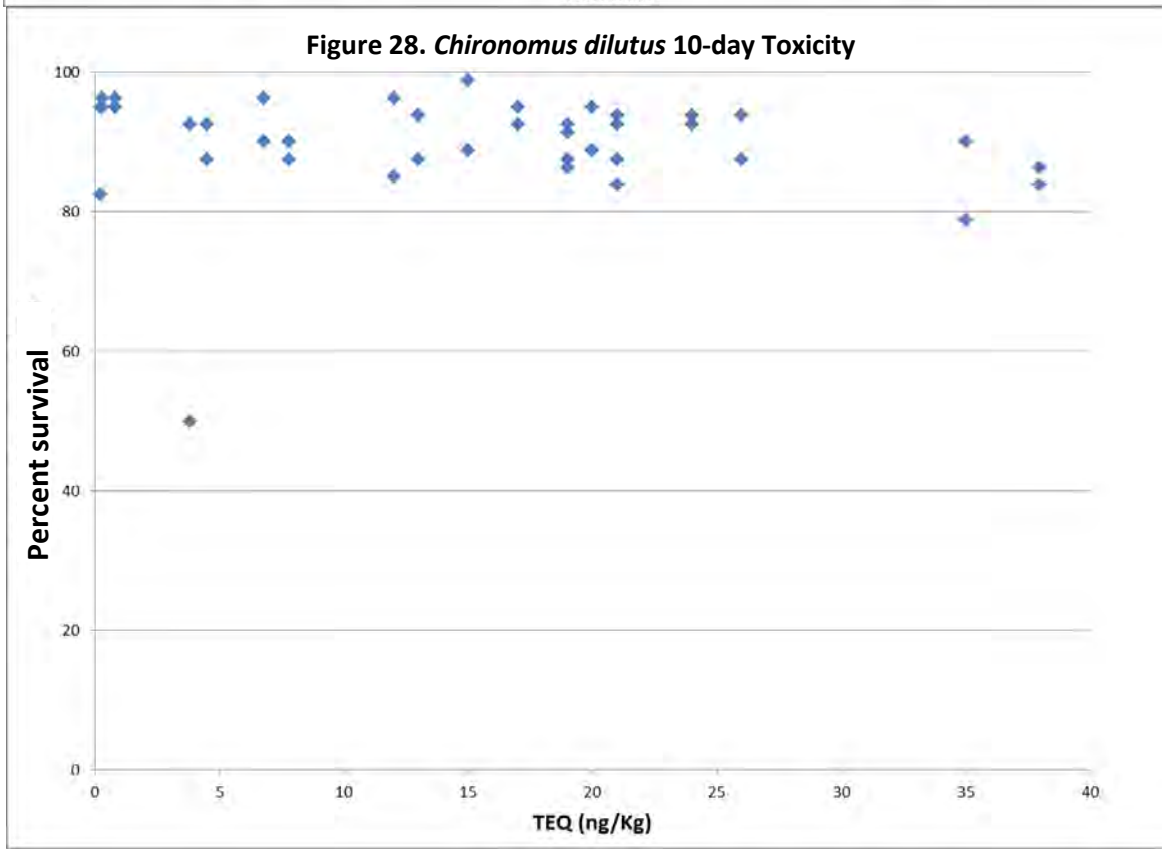
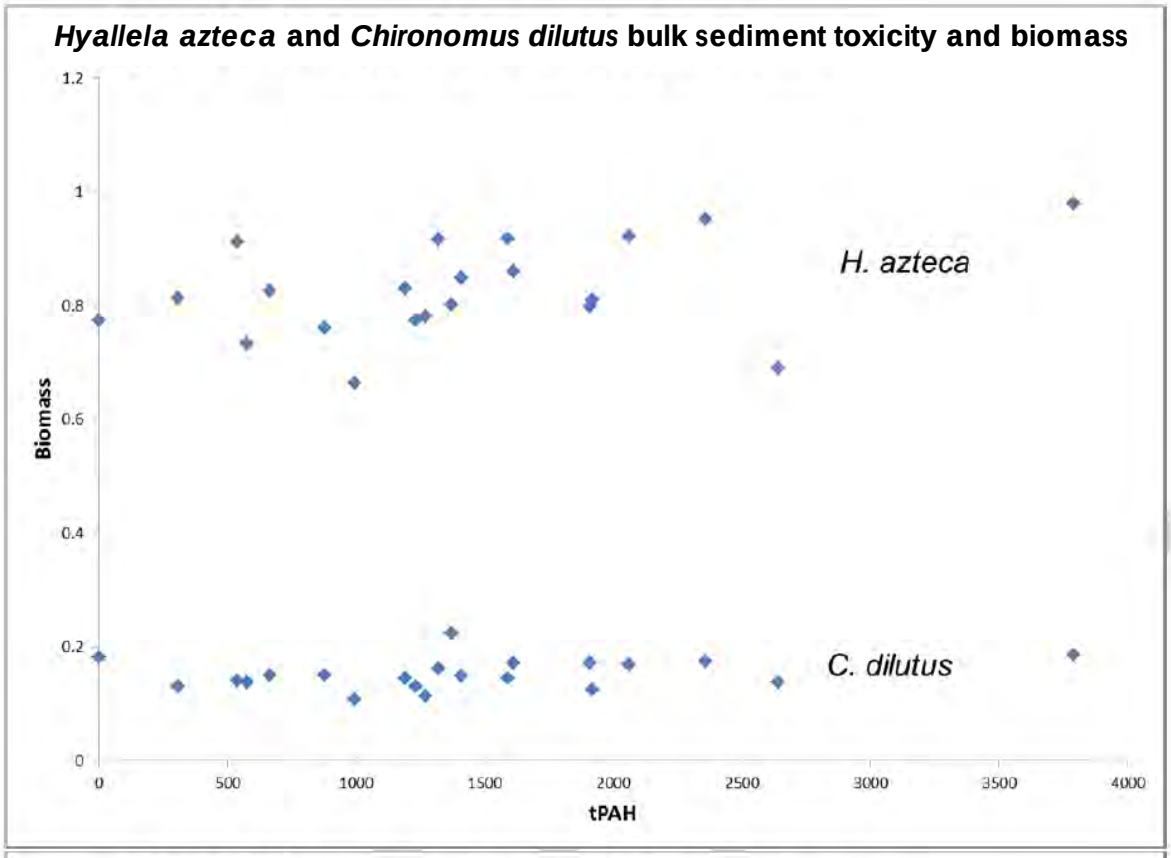


Figure 28. *Chironomus dilutus* 10-day Toxicity
Percent survival
100
80
60
40
20
0
0
5
10
15
20
25
30
35
40
TEQ (ng/Kg)

Figure 29


Hyallela azteca and *Chironomus dilutus* bulk sediment toxicity and biomass
Biomass
tPAH
H. azteca
C. dilutus
0
0.2
0.4
0.6
0.8
1
1.2
0
500
1000
1500
2000
2500
3000
3500
4000

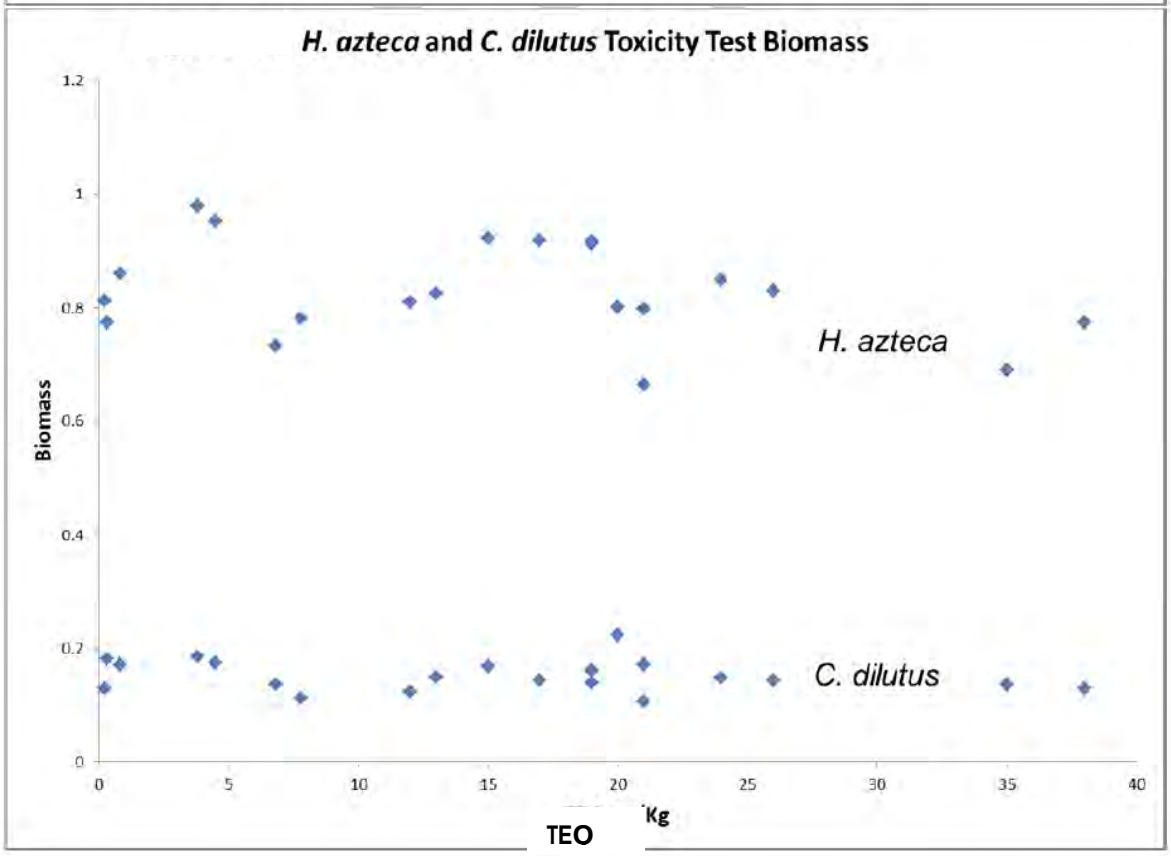

H. azteca and *C. dilutus* Toxicity Test Biomass
Biomass
TEO
Kg
H. azteca
C. dilutus
0
0.2
0.4
0.6
0.8
1
1.2
0
5
10
15
20
25
30
35
40

Figure No.

30

Title

PAHs Kriging Results (Deviation from SQT II)

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-04
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

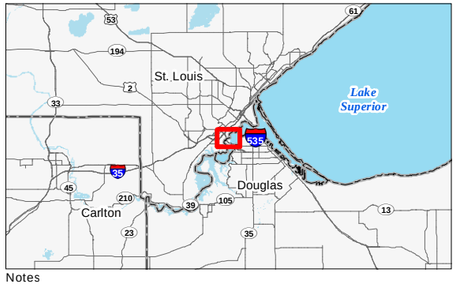
N

Legend

- Approx. Project Location
- Sample Point included in Interpolation

Deviation from SQT II as Percentage

- >30%
- 21 - 30%
- 11 - 20%
- 0 - 10%
- -1 - -10%
- -11 - -20%
- -21 - -30%
- <-30%
- Insufficient Data



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1193\active\193702726\07_Analysis\Sediment\Maps\mxds\St Louis River Interpolation Inv-p2 mxd Revised: 2015-06-01 By: mpitcher

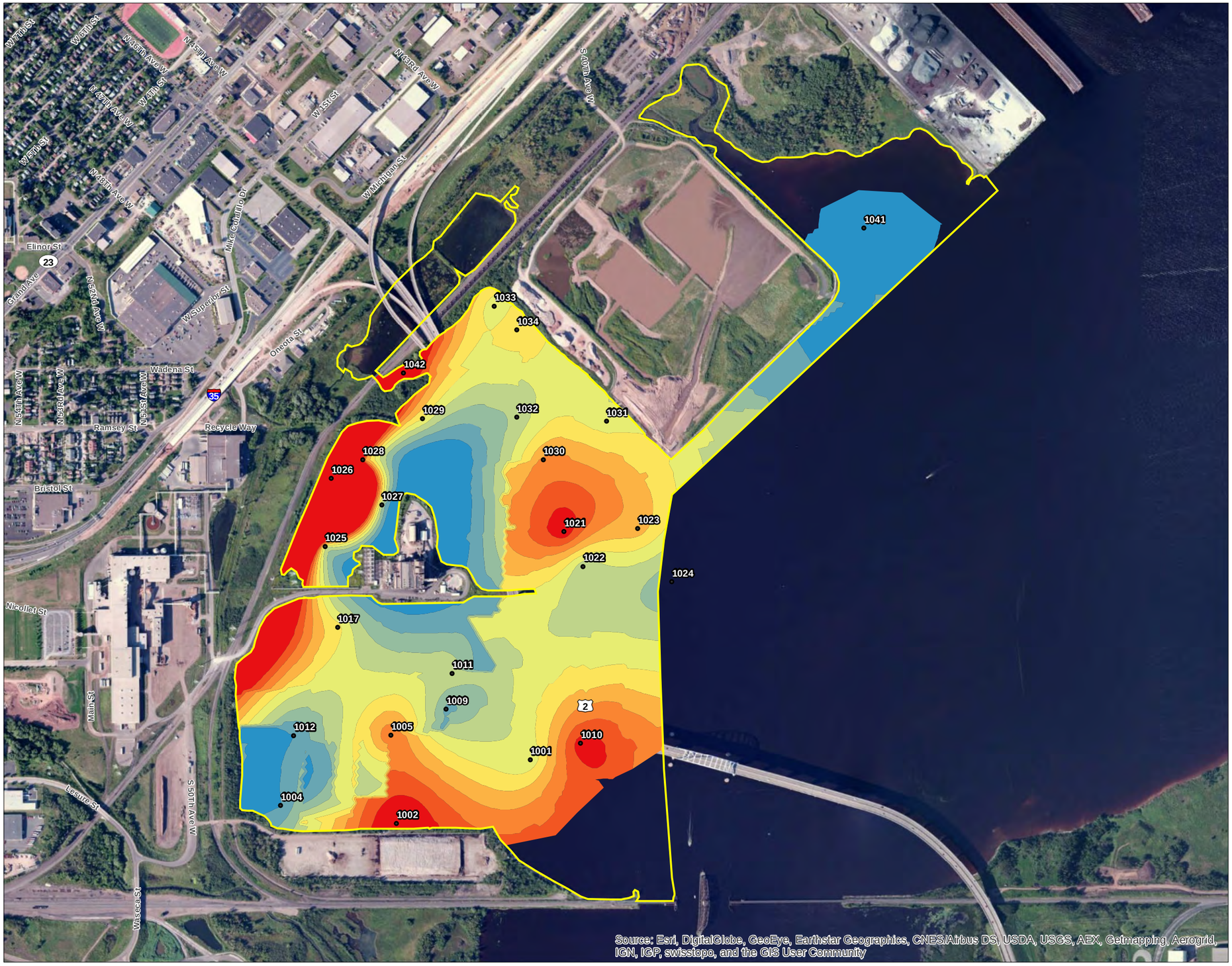


Figure No.
31

Title
PAHs Kriging Results (Deviation from SQT I)

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-04
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

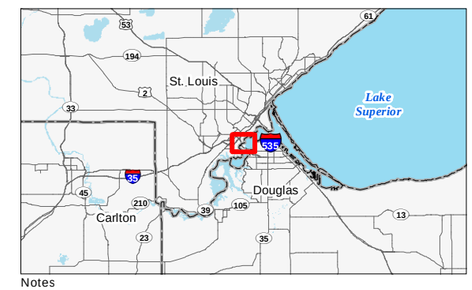
N

Legend

- Approx. Project Location
- Sample Point included in Interpolation

Deviation from SQT I as Percentage

- > 80%
- 61 - 80%
- 41 - 60%
- 21 - 40%
- 0 - 20%
- -21 - 0%
- -41 - -20%
- -61 - -40%
- -81 - -60%
- < -80%
- Insufficient Data



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-gis\mxds\SedimentMap\pah\St Louis River interpolation level1.mxd Revised: 2015-04-27 By: mpichler

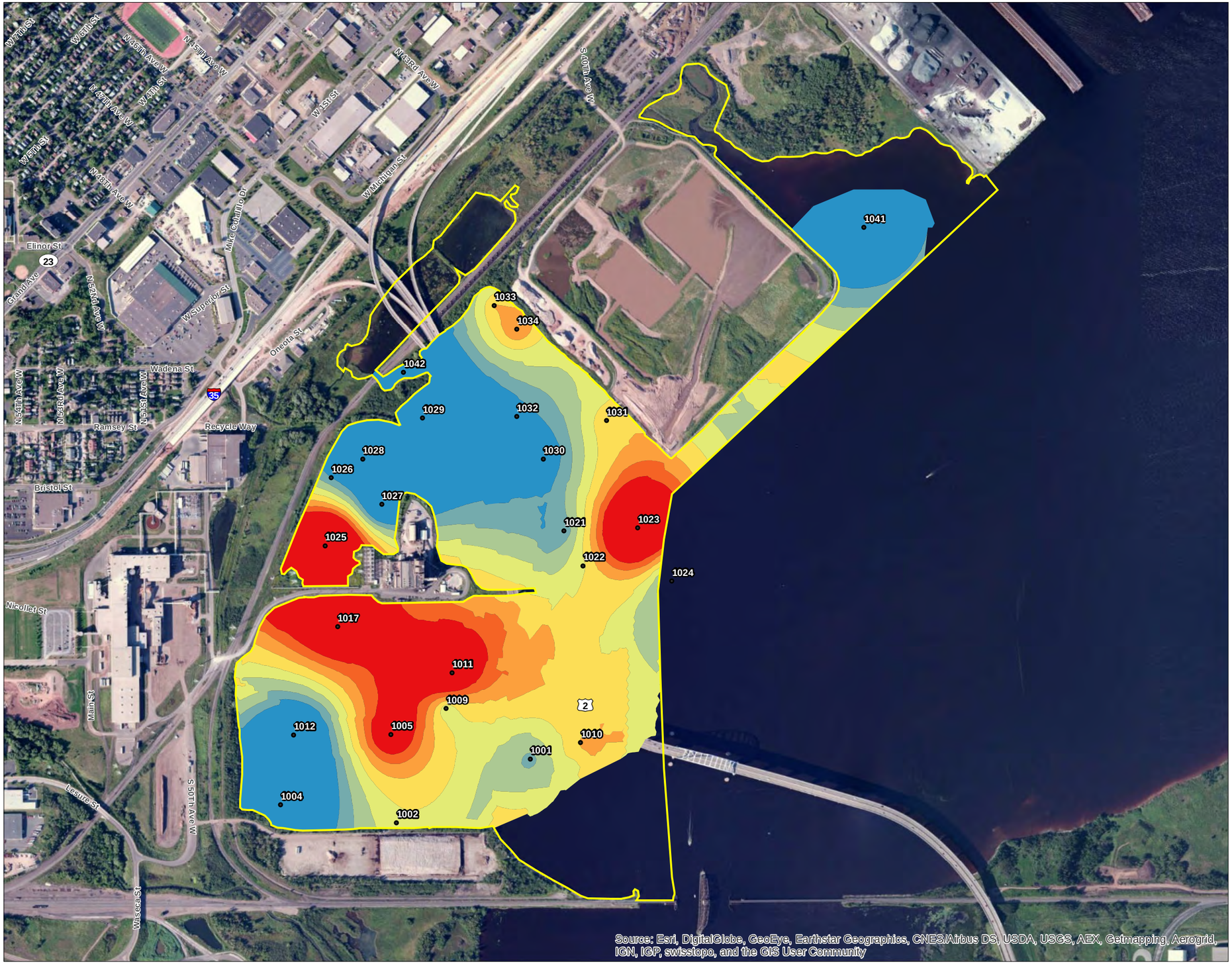


Figure No.

32

Title

Dioxins and Furans TEQ Kriging Results (Deviation from SQT II)

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-04
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

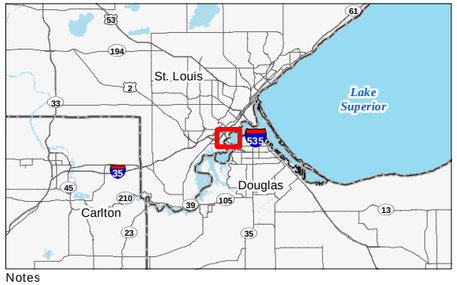
N

Legend

- Approx. Project Location
- Sample Point included in Interpolation

Deviation from SQT II as Percentage

- >30%
- 21 - 30%
- 11 - 20%
- 0 - 10%
- -1 - -10%
- -11 - -20%
- -21 - -30%
- <-30%
- Insufficient Data



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1693\active\193702726\07_arcs\mxds\Sediment\Mapping\StLouis_River_Interpolation_fig32.mxd Revised: 2015-04-27 By: mmichler

Figure No.
33

Dioxins and Furans TEQ Kriging Results (Deviation from SQT I)

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-12-04
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

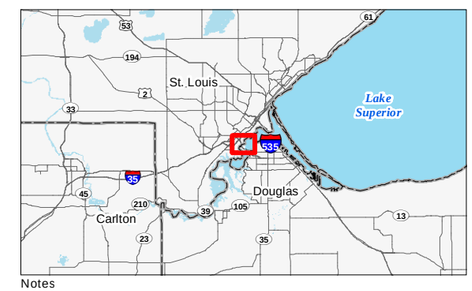
N

Legend

- Approx. Project Location
- Sample Point included in Interpolation

Deviation from SQT I as Percentage

- > 4500%
- 4001 - 4500%
- 3501 - 4000%
- 3001 - 3500%
- 2501 - 3000%
- 2001 - 2500%
- 1501 - 2000%
- 1001 - 1500%
- 501 - 1000%
- < 500%
- Insufficient Data



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07-arcmxds\SedimentMapping\St Louis River Interpolation_level1.mxd Revised: 2015-04-27 By: mmichler

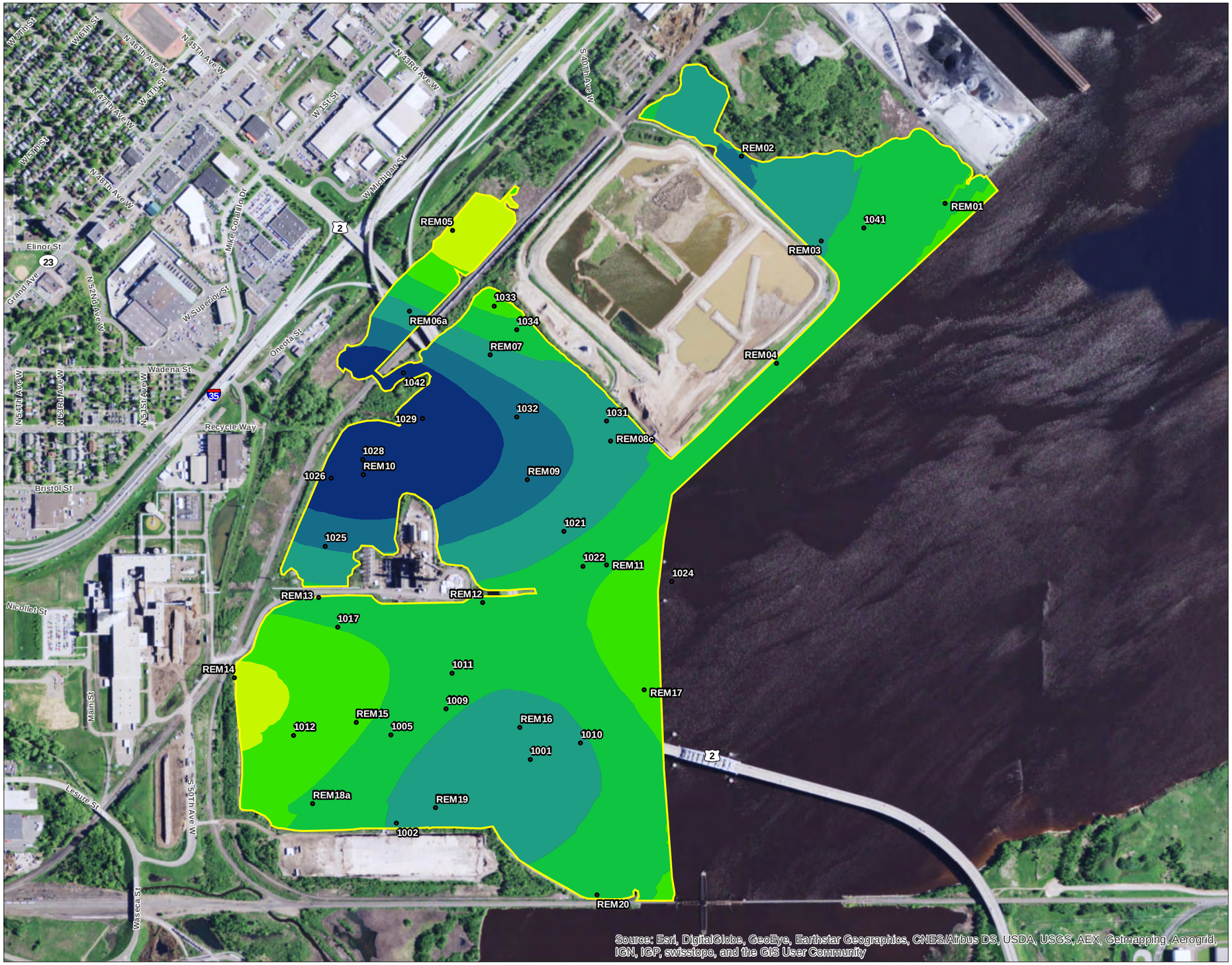


Figure No.

34

Title

Benthic Kriging Results Combined 2010 and 2014 Data

Client/Project

U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location

T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-05-13
Technical Review by XXX on 2015-XX-XX
Independent Review by XXX on 2015-XX-XX

0 400 800 Feet

1:9,600 (At original document size of 11x17)

N

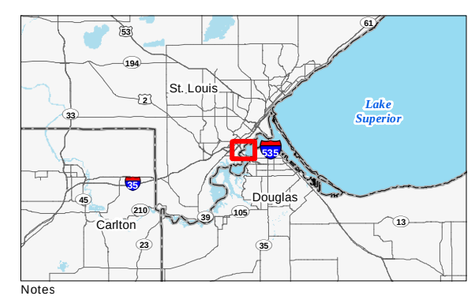
Legend

- Approx. Project Location
- Sample Point included in Interpolation

Combined Benthic Metric

- 0.0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- >0.9
- Insufficient Data

Improving Values



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services, USEPA
3. Orthophotography: Esri

Stantec

JEWELL associates engineers, inc.
Engineers • Surveyors • Architects

U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\193702\active\193702726\07_maps\Macroinvert_Magnum\StLouis_River_Metro_Interpolation.mxd Revised: 2015-05-13 By: mschler

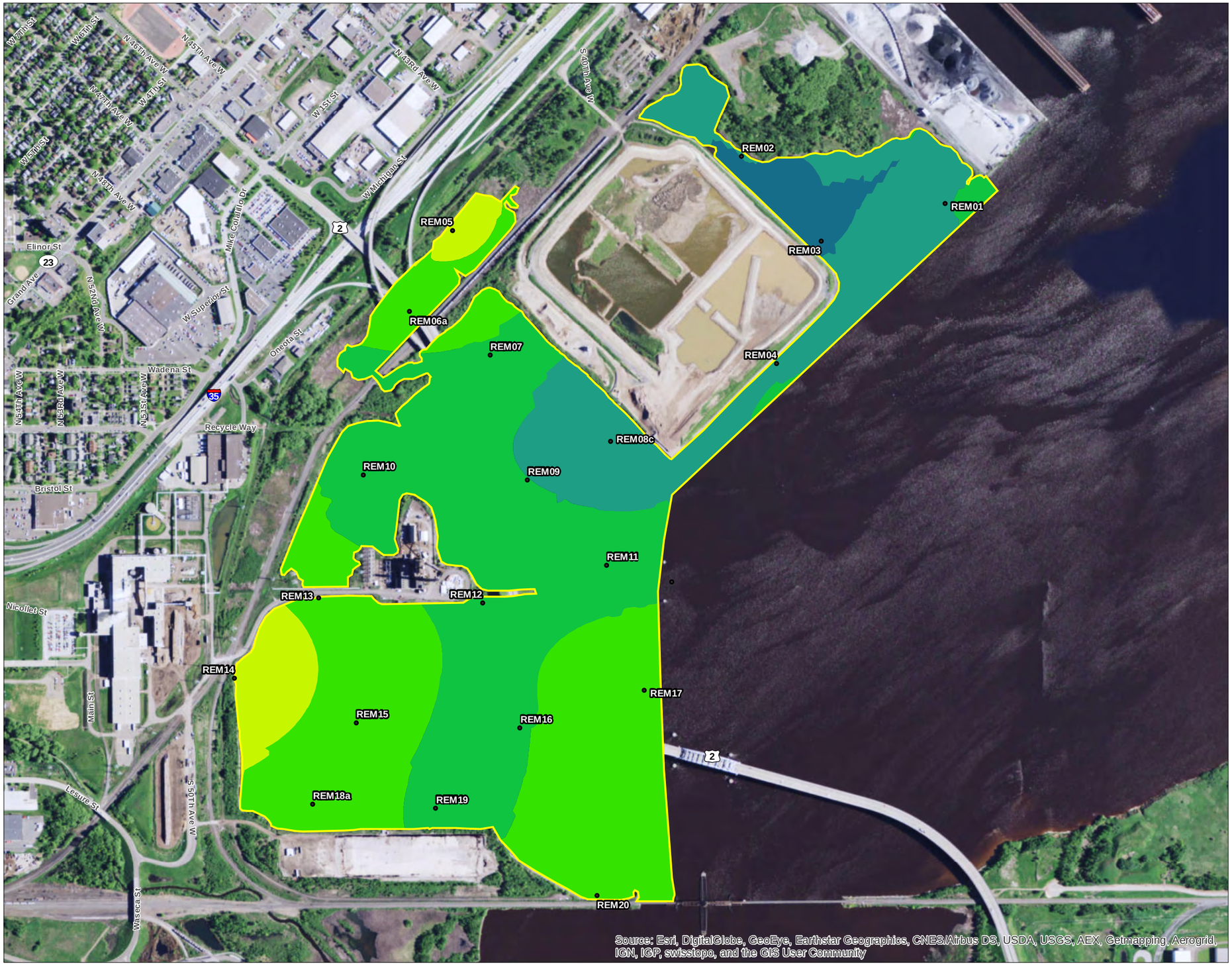


Figure No.
35

Title
Benthic Kriging Results 2010 Data

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-05-13
Technical Review by XXX on 2015-XX-XX
Independent Review by XXX on 2015-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

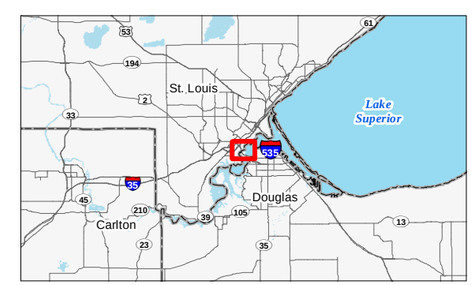
Legend

- Approx. Project Location
- Sample Point included in Interpolation

Combined Benthic Metric

0.0 - 0.1	
0.1 - 0.2	
0.2 - 0.3	
0.3 - 0.4	
0.4 - 0.5	
0.5 - 0.6	
0.6 - 0.7	
0.7 - 0.8	
0.8 - 0.9	
>0.9	
Insufficient Data	

Improving Values



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services, USEPA
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1937\active\193702726\07_gis\mxds\Macroinvert_Macroinvert_Macro\StLouis_River_Macro_Interpolation.mxd Revised: 2015-05-13 By: mmichler

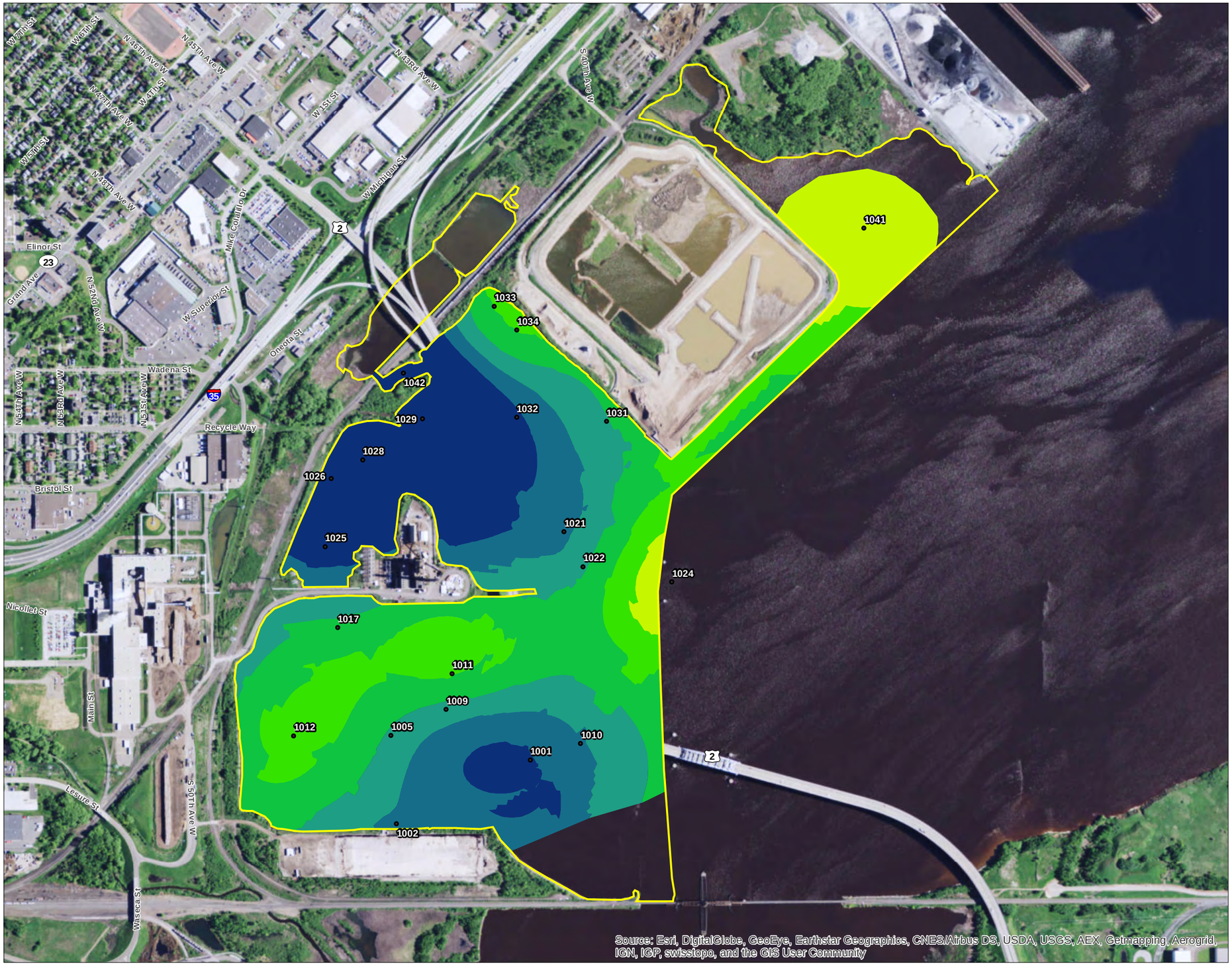


Figure No.
36

Title
Benthic Kriging Results 2014 Data

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2015-05-13
Technical Review by XXX on 2015-XX-XX
Independent Review by XXX on 2015-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

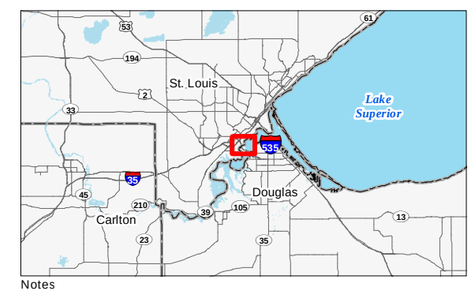
Legend

- Approx. Project Location
- Sample Point included in Interpolation

Combined Benthic Metric

- 0.0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- >0.9
- Insufficient Data

Improving Values



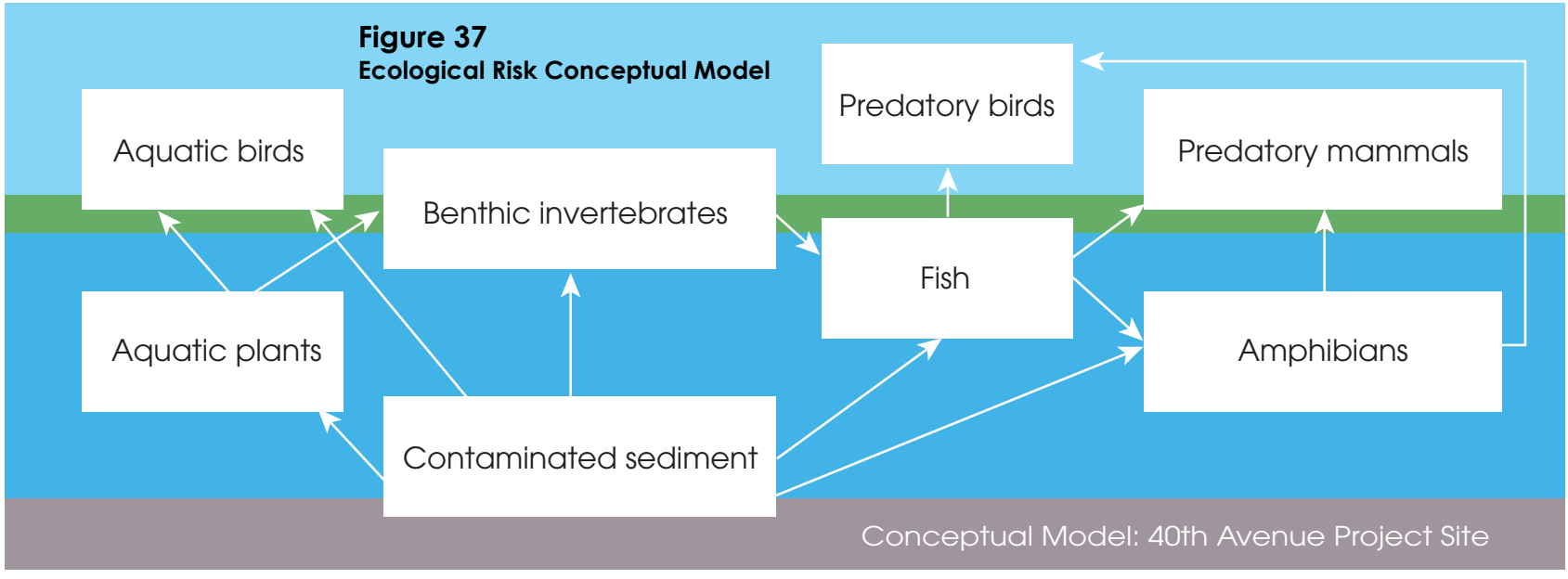
Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec, Esri, Community GIS Services
3. Orthophotography: Esri

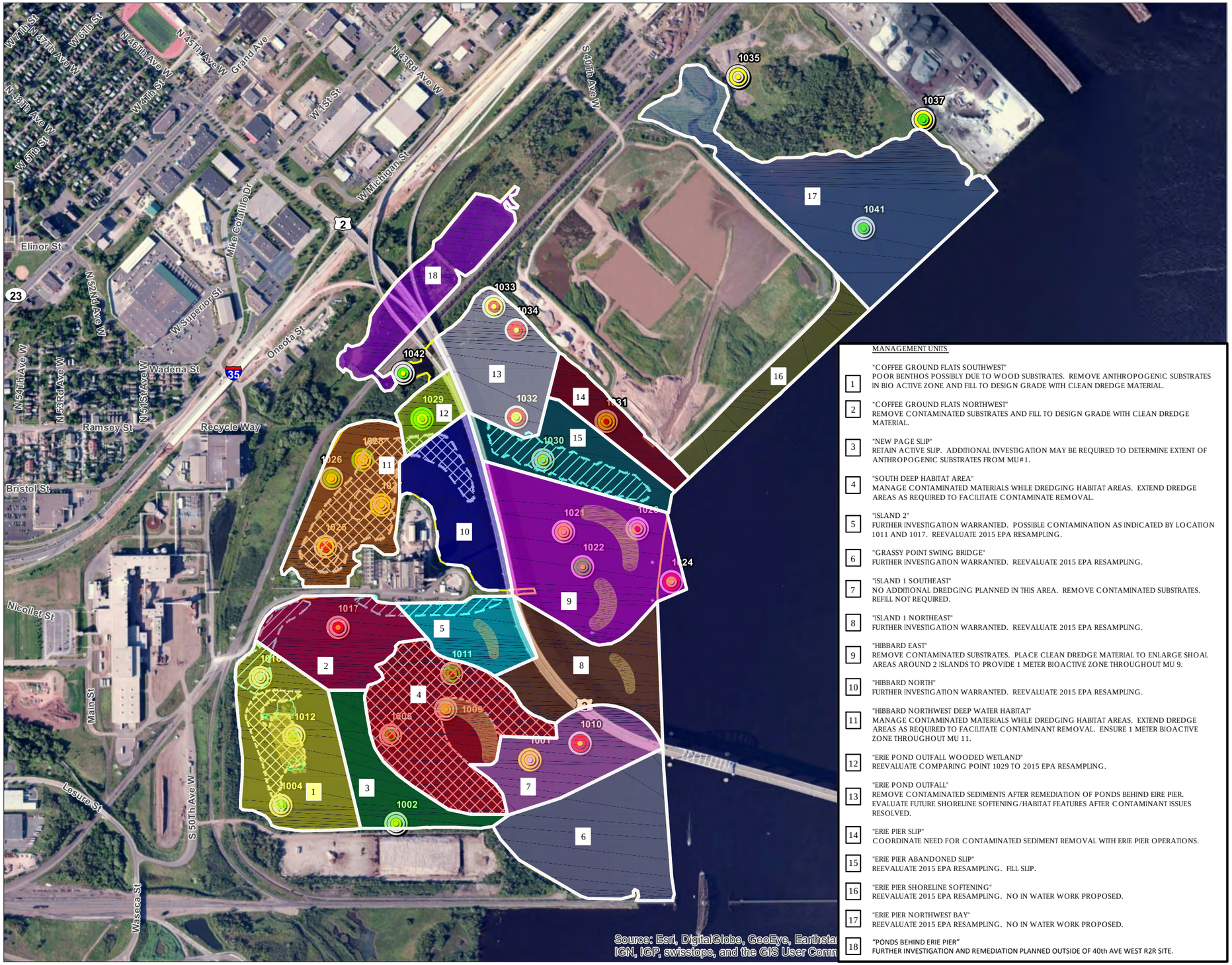
Stantec
JEWELL associates engineers, inc.
Engineers - Surveyors - Architects

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

V:\1193\active\193702726\07_gis\mxds\Macroinvert_Macroinvert\StLouis_River_Macro_interpolation1.mxd Revised: 2015-05-13 By: mpichler

Figure 37
Ecological Risk Conceptual Model





MANAGEMENT UNITS

1	"COFFEE GROUND FLATS SOUTHWEST" POOR BENTHOS POSSIBLY DUE TO WOOD SUBSTRATES. REMOVE ANTHROPOGENIC SUBSTRATES IN BIO ACTIVE ZONE AND FILL TO DESIGN GRADE WITH CLEAN DREDGE MATERIAL.
2	"COFFEE GROUND FLATS NORTHWEST" REMOVE CONTAMINATED SUBSTRATES AND FILL TO DESIGN GRADE WITH CLEAN DREDGE MATERIAL.
3	"NEW PAGE SLIP" RETAIN ACTIVE SLIP. ADDITIONAL INVESTIGATION MAY BE REQUIRED TO DETERMINE EXTENT OF ANTHROPOGENIC SUBSTRATES FROM MU#1.
4	"SOUTH DEEP HABITAT AREA" MANAGE CONTAMINATED MATERIALS WHILE DREDGING HABITAT AREAS. EXTEND DREDGE AREAS AS REQUIRED TO FACILITATE CONTAMINATE REMOVAL.
5	"ISLAND 2" FURTHER INVESTIGATION WARRANTED. POSSIBLE CONTAMINATION AS INDICATED BY LOCATION 1011 AND 1017. REEVALUATE 2015 EPA RESAMPLING.
6	"GRASSY POINT SWING BRIDGE" FURTHER INVESTIGATION WARRANTED. REEVALUATE 2015 EPA RESAMPLING.
7	"ISLAND 1 SOUTHEAST" NO ADDITIONAL DREDGING PLANNED IN THIS AREA. REMOVE CONTAMINATED SUBSTRATES. REFILL NOT REQUIRED.
8	"ISLAND 1 NORTHEAST" FURTHER INVESTIGATION WARRANTED. REEVALUATE 2015 EPA RESAMPLING.
9	"HIBBARD EAST" REMOVE CONTAMINATED SUBSTRATES. PLACE CLEAN DREDGE MATERIAL TO ENLARGE SHOAL AREAS AROUND 2 ISLANDS TO PROVIDE 1 METER BIOACTIVE ZONE THROUGHOUT MU 9.
10	"HIBBARD NORTH" FURTHER INVESTIGATION WARRANTED. REEVALUATE 2015 EPA RESAMPLING.
11	"HIBBARD NORTHWEST DEEP WATER HABITAT" MANAGE CONTAMINATED MATERIALS WHILE DREDGING HABITAT AREAS. EXTEND DREDGE AREAS AS REQUIRED TO FACILITATE CONTAMINANT REMOVAL. ENSURE 1 METER BIOACTIVE ZONE THROUGHOUT MU 11.
12	"ERIE POND OUTFALL WOODED WETLAND" REEVALUATE COMPARING POINT 1029 TO 2015 EPA RESAMPLING.
13	"ERIE POND OUTFALL" REMOVE CONTAMINATED SEDIMENTS AFTER REMEDIATION OF PONDS BEHIND EIRE PIER. EVALUATE FUTURE SHORELINE SOFTENING/HABITAT FEATURES AFTER CONTAMINANT ISSUES RESOLVED.
14	"ERIE PIER SLIP" COORDINATE NEED FOR CONTAMINATED SEDIMENT REMOVAL WITH ERIE PIER OPERATIONS.
15	"ERIE PIER ABANDONED SLIP" REEVALUATE 2015 EPA RESAMPLING. FILL SLIP.
16	"ERIE PIER SHORELINE SOFTENING" REEVALUATE 2015 EPA RESAMPLING. NO IN WATER WORK PROPOSED.
17	"ERIE PIER NORTHWEST BAY" REEVALUATE 2015 EPA RESAMPLING. NO IN WATER WORK PROPOSED.
18	"PONDS BEHIND ERIE PIER" FURTHER INVESTIGATION AND REMEDIATION PLANNED OUTSIDE OF 40th AVE WEST R2R SITE.

Figure No.
38

Title
Revised Management Units

Client/Project
U.S. Fish and Wildlife Service
40th Avenue West Remediation to Restoration Project
St. Louis River Estuary

Project Location
T49N, R14W, S07; 08; 17; 18
C. of Duluth, St. Louis Co., MN

193702726
Prepared by MCP on 2014-11-21
Technical Review by XXX on 2014-XX-XX
Independent Review by XXX on 2014-XX-XX

0 400 800 Feet
1:9,600 (At original document size of 11x17)

N

Legend

- Management Units
- Island Or Shoal
- Fill Area
- Cut Area

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources Include: Stantec
3. Orthophotography: Esri

Stantec
JEWELL associates engineers, inc. Engineers · Surveyors · Architects
U.S. FISH & WILDLIFE SERVICE

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

\\ 193702726\07-GIS\Maps\Sediment\Mapping\St Louis River Sediment Mapping TEQ overview.mxd Revised: 2015-03-24 By: mcphister

TABLES

Table 1. Summary of Sampling Protocol

Sample Location ID	Sample Area	Geotechnical	Test Methods						
			PCB	PAH	Metals	PCDD/F	Ammonia	Sulfide	Bioassay [2]
			Number of Samples per Sample Location [1]						
1001	5	1	2	2	2	2	--	--	1
1002	5		2	2	2	2	--	--	1
1004	6		2	2	2	2	1	1	
1005	6		2	2	2	2	--	--	1
1009	4	1	2	2	2	2	--	--	1
1010	4		3	3	3	3	--	--	1
1011	4		3	3	3	3	--	--	1
1012	6		2	2	2	2	1	1	1
1016			--	--	--	--	1	1	
1017	6		2	2	2	2	--	--	1
1021	3		3	3	3	3	--	--	1
1022	3		3	3	3	3	--	--	1
1023	3	1	2	2	2	2	--	--	
1024	3		3	3	3	3	--	--	1
1025	2		3	3	3	3	--	--	1
1026	2		3	3	3	3	--	--	1
1027	2		4	4	4	4	--	--	
1028	2		4	4	4	4	--	--	1
1029	2		4	4	4	4	--	--	1
1030	1		2	2	2	2	--	--	
1031 (Reference)	1		3	3	3	3	--	--	1
1032	1		3	3	3	3	--	--	1
1033	1		3	3	3	3	--	--	1
1034	1		3	3	3	3	--	--	1
1035	ww[3]	1	3	3	3	3	1	--	
1037	ww[3]	1	3	3	3	3	1	--	
1041 (Reference)	ww[3]						1	1	1
1042			2	2	2	2	--	--	1
Duplicate			2	2	2	2	--	--	
MS/MSD			2	2	2	2	--	--	

1. Number of samples per locations corresponds to the following depths: 1 sample = surface; 2 samples = surface & 50 cm; 3 samples = surface, 50 cm & 100 cm; 4 samples = surface, 50 cm, 100 cm & 200 cm

2. 28-day Hyalella azteca (amphipod); 10-day Chironomus dilutus (midge); 28-day Lumbriculus Variegatus (blackworm); Benthic Community Analysis; TOC; Particle size distribution

3. ww = Wood Waste Area

MS/MSD = Matrix Spike/Matrix Spike Duplicate

Table 2. Station Coordinates

Station ID	Northing	Easting
1001	414021	2863183
1002	413510	2862116
1004	413654	2861193
1005	414213	2862073
1009	414423	2862511
1010	414152	2863585
1011	414708	2862558
1012	414209	2861295
1016	414672	2861024
1017	415073	2861644
1021	415841	2863450
1022	415564	2863604
1023	415865	2864040
1024	415444	2864311
1025	415721	2861543
1026	416263	2861592
1027	416052	2861995
1028	416411	2861843
1029	416741	2862320
1030	416415	2863284
1031	416722	2863788
1032	416753	2863071
1033	417640	2862891
1034	417452	2863072
1035	419474	2864838
1037	419136	2866313
1041	418266	2865840
1042	417106	2862169

Table 3. Physical Sediment Analysis: Percent Moisture, Grain Size, and Total Organic Carbon

	SS 1022	SS 1024	SS 1032	SS 1021	SS 1026	SS 1028	SS 1025	SS 1010	SS 1029	SS 1001	SS 1042
Percent Moisture (%)	54.7	51.2	49.1	46.2	60.7	52.7	70.9	55.3	30.5	55.8	34.4
Total Organic Carbon (mg/kg)	100000	31700	37700	44100	102000	134000	92900	45700	38000	52700	30200
Grain Size											
Percent Clay (%)	20.0	20.0	12.5	12.5	12.5	7.5	22.5	20.0	5.0	20.0	7.5
Percent Sand (%)	25.0	20.0	47.5	45.0	37.5	72.5	17.5	22.5	80.0	27.5	75.0
Percent Silt (%)	55.0	60.0	40.0	42.5	50.0	20.0	60.0	57.5	15.0	52.5	17.5
Texture	silt loam	silt loam	loam	loam	silt loam	sandy loam	silt loam	silt loam	loamy sand	silt loam	sandy loam

Table 4. Stantec-St. Louis River 40th Avenue Project 10-day *Chironomus dilutus* Survival and Growth

Sample I.D.	GLEC No.	Percent Survival (%)	Growth (average mg)	Biomass (average mg)
GLEC Lab Control*	Lab Control 124	100	1.3275	1.3275
SS-1041-AT site ref^	10254	96.3	0.8089*	0.7743*
Water Only	Secondary Control	92.5	0.9085	0.8434
SS-1022-AT	10207	83.8*^	0.7972*	0.6646*
SS-1024AT	10208	87.5*^	0.9486*	0.8255*
SS-1031-AT	10222	92.5	0.9225*	0.8489*
SS-1032-AT	10209	96.3*	0.7603*	0.7326*
SS-1021-AT	10210	90.0*	0.8720*	0.7809*
SS-1026-AT	10212	98.8	0.9343*	0.9222*
SS-1028-AT	**10213**	**92.5***	**1.0318***	**0.9515***
SS-1025-AT	10214	93.8*	0.8855*	0.8300*
SS-1010-AT	10215	85.0*^	0.9554*	0.8103*
SS-1029-AT	**10216**	**96.3***	**0.8938***	**0.8599***
SS-1001-AT	10217	73.8*^	1.0638*	0.7621*
SS-1042-AT	**10218**	**92.5***	**1.0645***	**0.9788***
SS-1009-AT	10219	86.3*	1.0784*	0.9120*
SS-1017-AT	10220	95.0*	0.9687*	0.9184*
SS-1011-AT	10221	86.3*^	0.9029*	0.7740*
SS-1033-AT	10223	91.3*	1.0127*	0.9158*
SS-1034-AT	10224	88.8*^	0.9064*	0.8024*
SS-1002-AT	10225	87.5*^	0.9279*	0.7986*
SS-1005-AT	10226	78.8*^	0.8728*	0.6894*
SS-1012-AT	10256	82.5*^	0.9732*	0.8134*

*Statistical difference for investigative sediment sample when compared to GLEC Lab Control.
^Statistical difference from investigative sediment sample when compared to Site Reference.

Table 5. Stantec-St. Louis River 40th Avenue Project 28-day *Hyallela azteca* Survival and Growth

Sample I.D.	GLEC No.	Percent Survival (%)	Growth (average mg)	Biomass (average mg)
GLEC Lab Control*	Lab Control 124	98.8	0.4036	0.3977
SS-1041-AT-sitef ref^	10254	95.0	0.1917*	0.1820*
Water Only	Secondary Control	90.0	0.2420	0.2201
SS-1022-AT	10207	92.5*	0.1169*^	0.1083*^
SS-1024-AT	10208	93.8*	0.1606*^	0.1503*^
SS-1031-AT	10222	93.8	0.1603*	0.1492*
SS-1032-AT	10209	90.0*	0.1538*	0.1384*^
SS-1021-AT	10210	87.5*	0.1301*^	0.1132*^
SS-1026-AT	10212	88.8*	0.1911*	0.1700*
SS-1028-AT	**10213**	**87.5*^**	**0.1961***	**0.1747***
SS-1025-AT	10214	87.5*	0.1667*	0.1457*
SS-1010-AT	10215	96.3	0.1308*^	0.1252*^
SS-1029-AT	**10216**	**95.0**	**0.1825***	**0.1726***
SS-1001-AT	10217	96.3	0.1573*^	0.1513*^
SS-1042-AT	**10218**	**50.0*^**	**0.4101**	**0.1865***
SS-1009-AT	10219	87.5*	0.1620*	0.1401*^
SS-1017-AT	10220	92.5	0.1581*^	0.1450*^
SS-1011-AT	10221	83.8*^	0.1568*^	0.1304*^
SS-1033-AT	10223	92.5	0.1752*	0.1621*
SS-1034-AT	10224	95.0	0.2382*	0.2243*
SS-1002-AT	10225	93.8	0.1837*	0.1730*
SS-1005-AT	10226	90.0*	0.1553*^	0.1386*^
SS-1012-AT	10256	95.0	0.1373*^	0.1309*^

*Statistical difference for investigative sediment sample when compared to GLEC Lab Control.
^Statistical difference for investigative sediment when compared to Site Reference

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 100814 LUMB	LAB CONTROL 100814 LUMB	SS-1022-AT	SS-1024-AT	SS-1032-AT	SS-1021-AT	SS-1026-AT	SS-1028-AT	SS-1025-AT
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
% Moisture	%	89.4	89.9	90.7	89.9	90.1	90.6	92.1	88.6	88.3
Acenaphthene	µg/Kg	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.75J	2.0J	<2.2
Acenaphthylene	µg/Kg	<1.2	<1.2	2.6J	2.2J	5.9	3.7	20.1	18.0	22.0
Anthracene	µg/Kg	<1.5	<1.5	6.7	7.9	14.4	8.7	39.1	53.1	39.5
Benzo(a)anthracene	µg/Kg	1.4J	1.1J	10.9	33.2	24.9	9.3	53.5	51.7	50.4
Benzo(a)pyrene	µg/Kg	21.2	29.4	36.9	45.9	76.1	47.6	70.5	82.5	52.2
Benzo(b)fluoranthene	µg/Kg	1.4J	1.9J	5.3	27.6	23.6	8.2	60.1	53.8	54.2
Benzo(g,h,i)perylene	µg/Kg	27.9	26.0	18.9	16.2	19.7	20.8	14.6	24.2	34.4
Benzo(k)fluoranthene	µg/Kg	1.6J	2.0J	7.4	39.6	40.2	13.2	64.8	77.9	60.0
Chrysene	µg/Kg	2.9J	2.3J	7.3	39.9	36.8	10.8	71.7	70.4	81.6
Dibenz(a,h)anthracene	µg/Kg	1.1J	1.1J	<0.90	<0.90	<0.90	<0.90	<0.90	4.6J	6.3J
Fluoranthene	µg/Kg	4.9	3.9	13.6	67.2	45.8	12.0	94.9	69.4	111
Fluorene	µg/Kg	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2.2J	3.5	<7.4
Indeno(1,2,3-cd)pyrene	µg/Kg	20.7	27.2	18.1	20.3	21.3	20.0	21.5	33.5	31.5
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	1.9J	<1.5	<1.5	2.5J	<1.5	<1.5	<6.0
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	2.7J	<1.4	1.8J	3.2J	<1.4	2.0J	<5.7
Naphthalene	µg/Kg	<0.76	0.89J	6.1	1.5J	2.1J	4.1	2.0J	3.0J	12.2J
Phenanthrene	µg/Kg	5.3	7.9	8.4	8.2	8.7	6.9	15.2	27.8	19.8
Pyrene	µg/Kg	4.5	3.1J	12.4	62.4	45.1	11.1	85.7	57.3	97.7

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 102214 LUMB	LAB CONTROL 102214 LUMB	SS-1010-AT	SS-1029-AT	SS-1001-AT	SS-1042-AT	SS-1009-AT	SS-1017-AT	SS-1011-AT
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.2	<3.4	<0.55	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	6.0J	3.3J	8.0J	<7.6	5.4	8.4	7.0
Anthracene	µg/Kg	<1.5	<1.5	13.3	6.2	16.8	<9.3	9.4	18.1	13.3
Benzo(a)anthracene	µg/Kg	1.3J	0.91J	42.1	18.6	45.5	80.9	18.5	39.0	38.8
Benzo(a)pyrene	µg/Kg	19.6	16.1	56.4	54.2	40.4	45.3	40.8	57.4	65.2
Benzo(b)fluoranthene	µg/Kg	1.1J	1.2J	46.2	43.8	60.1	178	21.7	34.4	56.3
Benzo(g,h,i)perylene	µg/Kg	30.8	20.7	31.1	20.0	33.8	66.9	14.9	19.7	14.9
Benzo(k)fluoranthene	µg/Kg	1.2J	1.6J	54.0	32.9	59.8	122	29.8	46.0	58.7
Chrysene	µg/Kg	3.0J	1.5J	56.3	34.1	69.6	160	24.6	52.5	43.8
Dibenz(a,h)anthracene	µg/Kg	1.4J	<0.90	3.6J	1.7J	4.0J	10.6J	<0.90	1.8J	<0.90
Fluoranthene	µg/Kg	4.9	2.5J	84.1	39.2	108	216	30.0	76.9	60.5
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<7.4	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	27.1	18.2	14.0	27.7	17.2	48.2	21.8	19.6	1.6J
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<6.0	<9.4	<1.5	<1.5	1.6
2-Methylnaphthalene	µg/Kg	1.9J	<1.4	<2.8	<1.4	<5.7	<8.9	1.8J	1.8J	2.4
Naphthalene	µg/Kg	<0.76	<0.76	4.0J	2.2J	5.6J	<4.8	4.4	4.1	6.0
Phenanthrene	µg/Kg	4.5	5.9	9.0	11.9	10.1J	29.8	5.7	9.3	9.5
Pyrene	µg/Kg	4.6	2.3J	84.4	36.5	99.7	237	30.1	68.6	64.7

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 111214 LUMB	CONTROL 111214 LUMB	SS-1031-AT	SS-1033-AT	SS-1034-AT	SS-1002-AT	SS-1005-AT	SS-1041-AT-ref sed	SS-1012-AT
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.8	<3.4	0.80J	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	3.8J	6.2	<6.0	8.3J	5.1	<1.2	<1.2
Anthracene	µg/Kg	<1.5	<1.5	10.9	13.1	21.1	28.2	10.2	2.2J	<1.5
Benzo(a)anthracene	µg/Kg	1.5J	0.78J	39.2	14.5	59.4	69.4	15.0	9.8	0.99J
Benzo(a)pyrene	µg/Kg	13.3	17.5	20.8	57.8	26.8	25.7	44.1	27.8	14.0
Benzo(b)fluoranthene	µg/Kg	1.6J	1.3J	40.9	14.3	64.8	107	7.8	12.3	0.63J
Benzo(g,h,i)perylene	µg/Kg	26.1	22.0	28.7	13.7	28.2	25.0	23.1	16.4	22.9
Benzo(k)fluoranthene	µg/Kg	1.3J	1.3J	44.4	22.9	68.9	64.1	10.8	16.2	<1.2
Chrysene	µg/Kg	2.8J	1.4J	53.5	22.4	100	119	12.4	13.4	1.2J
Dibenz(a,h)anthracene	µg/Kg	1.1J	<0.90	2.5J	<0.90	<4.5	5.9J	<0.90	<0.90	<0.90
Fluoranthene	µg/Kg	4.2	2.1J	76.1	32.4	158	198	23.3	16.4	2.4J
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<9.2	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	22.4	19.4	10.0	16.7	25.0	19.9J	20.2	19.7	16.0
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<7.5	<9.4	3.1J	1.9J	<1.5
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	<2.8	<1.4	<7.1	<8.9	4.8	2.5J	<1.4
Naphthalene	µg/Kg	1.2J	1.0J	<1.5	1.1J	<3.8	<4.8	14.3	2.3J	<0.76
Phenanthrene	µg/Kg	4.9	3.3J	6.1J	6.9	17.6	15.8J	9.1	7.5	3.0J
Pyrene	µg/Kg	4.3	1.8J	73.8	29.9	162	190	23.0	17.3	2.6J

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 100814 LUMB	LAB CONTROL 100814 LUMB	SS-1022-AT	SS-1024-AT	SS-1032-AT	SS-1021-AT	SS-1026-AT	SS-1028-AT	SS-1025-AT
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
Arsenic	mg/Kg	0.21	1.5	1.5	1.0	0.75	0.66	0.69	0.86	1.1
Barium	mg/Kg	11.5	15.2	22.6	15.8	21.5	33.0	29.7	49.5	33.3
Cadmium	mg/Kg	0.037J	0.030J	0.041J	0.033J	0.041J	0.034J	0.027J	0.043J	0.047J
Chromium	mg/Kg	0.061J	0.11	0.31	0.30	0.37	0.39	0.22	0.23	0.36
Copper	mg/Kg	2.0	7.6	9.4	7.1	8.1	8.6	6.8	12.4	12.6
Lead	mg/Kg	0.062J	0.13	0.50	0.24	0.46	0.42	0.26	0.27	0.48
Mercury	mg/Kg	<0.0076	0.0078J	<0.0075	0.0086J	0.0075J	<0.0070	<0.0074	<0.0069	0.0081J
Nickel	mg/Kg	0.065J	0.085J	0.25	0.28	0.29	0.28	0.17	0.19	0.30
% Moisture	%	89.0	89.4	89.9	90.7	90.1	90.6	92.1	88.6	88.3
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	20.2J	14.4J	31.6	19.3J	13.9J	16.6J	37.4
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	26.2	14.9J	55.4	31.6	28.0	27.0	73.9
PCB, Total	µg/Kg	<12.5	<12.5	46.4	29.3	87.0	50.9	41.9	43.7	111

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 102214 LUMB	LAB CONTROL 102214 LUMB	SS-1010-AT	SS-1029-AT	SS-1001-AT	SS-1042-AT	SS-1009-AT	SS-1017-AT	SS-1011-AT
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
Arsenic	mg/Kg	0.19	1.1	0.82	0.43	0.86	0.44	0.37	0.70	0.62
Barium	mg/Kg	9.6	10.7	16.5	13.1	15.2	15.2	13.1	17.5	16.0
Cadmium	mg/Kg	0.032J	0.021J	0.031J	0.043J	0.026J	0.062J	0.020J	0.027J	0.029J
Chromium	mg/Kg	0.067J	0.13	0.29	0.46	0.29	0.59	0.18	0.49	0.26
Copper	mg/Kg	1.1	3.6	5.2	4.7	4.5	4.9	3.4	4.6	3.5
Lead	mg/Kg	0.061J	0.087J	0.26	0.34	0.26	0.51	0.36	0.47	0.49
Mercury	mg/Kg	<0.0075	<0.0074	<0.0075	<0.0074	<0.0070	<0.0072	<0.0073	<0.0067	<0.0070
Nickel	mg/Kg	0.066J	0.090J	0.25	0.28	0.22	0.35	0.19	0.33	0.19
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	15.5J	53.8	15.8J	65.6	<12.5	18.2J	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	19.3J	75.4	18.1J	105	<12.5	25.8	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	34.8	129	33.9	171	<12.5	44.0	<12.5

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte	Units	BKGD 111214 LUMB	CONTROL 111214 LUMB	SS-1031-AT	SS-1033-AT	SS-1034-AT	SS-1002-AT	SS-1005-AT	SS-1041-AT-ref sed	SS-1012-AT
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
Arsenic	mg/Kg	0.18	1.6	1.1	1.0	0.62	0.99	0.98	0.26	0.25
Barium	mg/Kg	10.7	18.6	20.2	22.9	18.2	17.4	27.2	14.8	15.7
Cadmium	mg/Kg	0.028J	0.034J	0.047J	0.042J	0.031J	0.029J	0.047J	0.036J	0.042J
Chromium	mg/Kg	0.11	0.11	0.30	0.28	0.26	0.19	0.27	0.50	0.32
Copper	mg/Kg	1.8	4.0	4.4	3.4	2.7	2.6	3.1	3.3	3.4
Lead	mg/Kg	0.058J	0.10	0.30	0.32	0.21	0.20	0.40	0.22	0.14
Mercury	mg/Kg	<0.0069	<0.0077	0.0084J	0.0086J	<0.0073	0.0079J	0.0099J	0.0073J	<0.0065
Nickel	mg/Kg	0.063J	0.10	0.27	0.22	0.19	0.21	0.25	0.27	0.32
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	14.6J	23.3J	18.2J	<12.5	16.9J	<12.5	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	13.9J	29.4	19.6J	<12.5	17.5J	<12.5	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	28.5	52.7	37.8	<12.5	34.4	<12.5	<12.5

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte Dioxin/Furans (ng/Kg)	BKGD 100814 LUMB	LAB CONTROL 100814 LUMB	SS-1022-AT	SS-1024-AT	SS-1032-AT	SS-1021-AT	SS-1026-AT	SS-1028-AT	SS-1025-AT
2,3,7,8-TCDF	0.12	0.2	ND	0.53	0.85	ND	ND	0.17	0
2,3,7,8-TCDD	ND	ND	ND	0.26	ND	ND	ND	ND	ND
1,2,3,7,8-PeCDF	ND	ND	ND	0.27	ND	ND	ND	ND	ND
2,3,4,7,8-PeCDF	ND	ND	ND	0.38	0	0	ND	0	0
1,2,3,7,8-PeCDD	ND	ND	ND	0	0.31	0	ND	0.078	ND
1,2,3,4,7,8-HxCDF	ND	ND	ND	0.39	0.28	0	0.12	0	0.21
1,2,3,6,7,8-HxCDF	ND	ND	0	0	0	0.12	ND	ND	0
2,3,4,6,7,8-HxCDF	ND	ND	ND	0.25	0.21	ND	0	0	0
1,2,3,7,8,9-HxCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	0.082	ND	0	ND	ND	0	0.097	ND
1,2,3,6,7,8-HxCDD	ND	0.086	0	0	0	0.41	0.41	0.31	0
1,2,3,7,8,9-HxCDD	ND	ND	ND	0.28	ND	ND	ND	0	0.28
1,2,3,4,6,7,8-HpCDF	0.042	0	3.1	7.7	4.3	3.1	1.6	1.7	3
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0	3.1	2.8	4	3.1	8.1	4.7	9.8
OCDF	ND	ND	1.8	1.9	2.3	1.4	2.6	1.7	0
OCDD	0.32	0.43	34	17	33	27	77	42	95
Total TCDF	0.27	2.1	0.25	4.1	4.9	0.58	0.64	1	3.1
Total TCDD	ND	0.25	ND	2.1	ND	ND	ND	0.19	0.37
Total PeCDF	ND	ND	1.2	6.9	4.4	0.45	1.4	1.3	3.4
Total PeCDD	ND	0.091	0.25	1.4	1.1	0.14	0.28	0.65	0.94
Total HxCDF	ND	ND	2.4	11	4	2.8	1.4	1.5	3.5
Total HxCDD	0.048	0.26	1.7	4.2	2.2	1.4	4.9	3.6	4.4
Total HpCDF	0.084	0.074	6.1	14	8.2	6	4.3	3.6	6.7
Total HpCDD	0.12	0.26	9	6.3	14	11	41	23	44
TEQ	0.12	0.18	0.32	1	0.98	0.4	0.4	0.34	0.58

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte Dioxin/Furans (ng/Kg)	BKGD 102214 LUMB	LAB CONTROL 102214 LUMB	SS-1010-AT	SS-1029-AT	SS-1001-AT	SS-1042-AT	SS-1009-AT	SS-1017-AT	SS-1011-AT
2,3,7,8-TCDF	ND	0.14	0.49	0.19	0	0	0.35	0	0.3
2,3,7,8-TCDD	ND	ND	0	ND	ND	ND	0.13	ND	0.23
1,2,3,7,8-PeCDF	ND	ND	0.25	ND	ND	ND	0.23	ND	0.43
2,3,4,7,8-PeCDF	ND	0.087	0.63	0.31	0	0.64	0.81	0.23	1.2
1,2,3,7,8-PeCDD	ND	0.082	0.58	0.12	0.36	0.46	0.43	0	0.61
1,2,3,4,7,8-HxCDF	ND	ND	0.43	0.12	0.3	0	0.79	0	0
1,2,3,6,7,8-HxCDF	ND	0.079	0.37	ND	0.29	0.17	0.71	0.16	1.4
2,3,4,6,7,8-HxCDF	ND	0	0.42	0.14	0.33	0	0.4	0.15	0.68
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	ND	ND	0	ND	0
1,2,3,4,7,8-HxCDD	ND	ND	0.23	0.12	0	0	0	ND	0
1,2,3,6,7,8-HxCDD	ND	0.091	1.2	0.26	0.93	3.2	1.2	0	1.9
1,2,3,7,8,9-HxCDD	ND	ND	0.47	ND	0	1.6	0.39	0	0.52
1,2,3,4,6,7,8-HpCDF	ND	0	8	1.1	7.1	1.3	17	2.8	25
1,2,3,4,7,8,9-HpCDF	ND	0	0.28	0	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0.18	4	1.5	3.4	45	2.8	2.8	3.3
OCDF	ND	0.53	2.2	1	2.4	0	3	0.9	6.6
OCDD	0	0.74	23	11	22	130	13	17	16
Total TCDF	0.14	0.78	4.4	4.2	3.9	7	6	3.5	8.9
Total TCDD	ND	0.26	3	ND	1.2	1.6	1.3	ND	2.3
Total PeCDF	ND	0.087	8.5	3	6.6	7.7	14	3.4	21
Total PeCDD	ND	0.19	1	0.21	1.4	13	2.4	0.68	5.1
Total HxCDF	ND	0.19	13	1.7	10	1.5	20	3.4	31
Total HxCDD	ND	0.22	6.4	1.2	5	51	6.5	2.2	9.4
Total HpCDF	ND	ND	16	2.1	13	2.9	29	5.6	43
Total HpCDD	ND	0.18	11	4.2	11	91	6.8	9.7	7.4
TEQ	0.11	0.23	1.5	0.41	1	2	1.4	0.47	2.1

TABLE 6. *LUMBRICULUS VARIEGATUS* TISSUE DATA FOR PERCENT LIPIDS, PERCENT MOISTURE, METALS, PCBs, DIOXIN/FURANS, AND PAHs FOR THE STANTECH, ST. LOUIS RIVER, 40TH AVE. SEDIMENT ASSESSMENT.

Analyte Dioxin/Furans (ng/Kg)	BKGD 111214 LUMB	LAB CONTROL 111214 LUMB	SS-1031-AT	SS-1033-AT	SS-1034-AT	SS-1002-AT	SS-1005-AT	SS-1041-AT-ref sed	SS-1012-AT
2,3,7,8-TCDF	ND	0.39	0.72	0.29	0.56	0.55	0.33	0.32	0.11
2,3,7,8-TCDD	ND	ND	0	ND	0.17	0	0.095	ND	ND
1,2,3,7,8-PeCDF	ND	ND	0.18	0	0.16	0	0	0.086	ND
2,3,4,7,8-PeCDF	ND	ND	0	0.23	0.39	0.38	0.19	0	ND
1,2,3,7,8-PeCDD	ND	ND	0.26	0.16	0.29	0.29	0	0.19	ND
1,2,3,4,7,8-HxCDF	ND	ND	0	0.18	0.22	0.31	0.16	0	ND
1,2,3,6,7,8-HxCDF	0.064	ND	0.37	0.23	0	0	0.19	0.24	ND
2,3,4,6,7,8-HxCDF	ND	ND	0.2	0	0.13	0.24	0.18	0.1	ND
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	0	0.098	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	ND	0.18	ND	0	0.16	0	0	ND
1,2,3,6,7,8-HxCDD	ND	ND	0.81	0.37	0.58	0.86	0.55	0	0.055
1,2,3,7,8,9-HxCDD	ND	ND	0.33	0	0	0.26	0.22	0	ND
1,2,3,4,6,7,8-HpCDF	0.089	0	5.6	2.9	3.7	5.5	6.6	5.1	0
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0.096	0.5	2.8	2.2	2	3	4.9	2.1	0
OCDF	ND	ND	1.6	1.3	1.2	1.4	2.5	1.1	ND
OCDD	0	0	15	16	11	16	81	9.7	0.53
Total TCDF	ND	1.7	7.4	2.9	7.2	5.6	2.7	2	0.71
Total TCDD	ND	ND	2.9	0.25	1.9	2.2	0.37	0.95	0.29
Total PeCDF	ND	ND	7.4	3.1	6.7	7.5	4	4.3	ND
Total PeCDD	0.086	ND	3.1	0.94	2.5	2.9	1.1	1.6	0.086
Total HxCDF	0.14	ND	9	3.6	5.4	8.5	6.2	6.5	0.045
Total HxCDD	ND	ND	5.7	1.4	3.6	5.6	4.9	2.8	0.19
Total HpCDF	0.089	ND	11	5.7	7	10	13	9.5	ND
Total HpCDD	0.17	0.5	7	6.4	5.7	8.3	18	5.1	ND
TEQ	0.17	0.29	0.89	0.47	0.84	0.9	0.58	0.55	0.087

Table 7. MPCA Level I and Level II Screening Thresholds

Chemical	Aquatic Life Level I SQT	Aquatic Life Level II SQT	Source[†]
Metals (in mg/kg DW)			
Arsenic[§]	9.8	33	MacDonald *et al.* (2000)
Cadmium*[§]	0.99	5.0	MacDonald *et al.* (2000)
Chromium[§]	43	110	MacDonald *et al.* (2000)
Copper*[§]	32	150	MacDonald *et al.* (2000)
Lead*[§]	36	130	MacDonald *et al.* (2000)
Mercury	0.18	1.1	MacDonald *et al.* (2000)
Nickel[§]	23	49	MacDonald *et al.* (2000)
Zinc*[§]	120	460	MacDonald *et al.* (2000)
PAHs (in µg/kg DW)			
2-Methylnaphthalene	20	200	CCME (1999)
Acenaphthene	6.7	89	CCME (1999)
Acenaphthylene	5.9	130	CCME (1999)
Anthracene*	57	850	MacDonald *et al.* (2000)
Fluorene	77	540	MacDonald *et al.* (2000)
Naphthalene*[§]	180	560	MacDonald *et al.* (2000)
Phenanthrene*[§]	200	1200	MacDonald *et al.* (2000)
Benz(a)anthracene*[§]	110	1100	MacDonald *et al.* (2000)
Benzo(a)pyrene*[§]	150	1500	MacDonald *et al.* (2000)
Chrysene*[§]	170	1300	MacDonald *et al.* (2000)
Dibenz(a,h)anthracene	33	140	MacDonald *et al.* (2000); CCME (1999)
Fluoranthene*	420	2200	MacDonald *et al.* (2000)
Pyrene*[§]	200	1500	MacDonald *et al.* (2000)
Total PAHs*[§]	1600	23000	MacDonald *et al.* (2000)
PCBs (in µg/kg DW)			
Total PCBs*[§]	60	680	MacDonald *et al.* (2000)
Pesticides (in µg/kg DW)			
Chlordane*	3.2	18	MacDonald *et al.* (2000)
Dieldrin*	1.9	62	MacDonald *et al.* (2000)
Sum DDD*	4.9	28	MacDonald *et al.* (2000)
Pesticides (continued)			
Sum DDE*[§]	3.2	31	MacDonald *et al.* (2000)
Sum DDT*	4.2	63	MacDonald *et al.* (2000)
Total DDT*	5.3	570	MacDonald *et al.* (2000)
Endrin	2.2	210	MacDonald *et al.* (2000)
Heptachlor epoxide*	2.5	16	MacDonald *et al.* (2000)
Lindane (gamma-BHC)	2.4	5	MacDonald *et al.* (2000)
Toxaphene	0.1	32	NYSDEC (1999)[¥]
Mean PEC-Q	0.1	0.6	USEPA 2000

SQT = sediment quality target; PEC-Q = probable effect concentration quotient; DW = dry weight.

[†] Some SQT values were rounded to two significant figures from the original source.
* Reliable consensus-based threshold effect concentration (TEC) values that were adopted as Level I SQTs [i.e., predictive ability ≥75% and ≥20 samples below the TEC (MacDonald *et al.* 2000)].
[§] Reliable consensus-based probable effect concentration (PEC) values that were adopted as Level II SQTs [i.e., predictive ability ≥75% and ≥20 samples predicted to be toxic (MacDonald *et al.* 2000)].
[¥] originally based on µg/g organic carbon; assumed total organic carbon (TOC) = 1%.

Table 2. Additional Recommended Level I and Level II SQTs for Chemicals of Interest

Chemical	Aquatic Life Level I SQT	Aquatic Life Level II SQT	Source
Polychlorinated dibenzo-p-dioxins/ dibenzo furans (in ng TEQ/kg DW)			
PCDD/Fs*	0.85	21.5	CCME 1999

SQT = sediment quality target; TEQ = toxic equivalent; DW = dry weight.
* Values are expressed as TEQ units, based on van den Berg *et al.*'s (1998) toxic equivalency factor (TEF) values for fish. There is currently insufficient information to determine TEFs for invertebrates.

Table 8. Macroinvertebrate Community Metrics (2014)

Site ID	GLEC Number	Abundance	Total Abundance m²	Richness	Shannon-Weiner Diversity	Simpson's	EPT Index	Hilsenhoff Index	% Dominant	Scrapers /Filterers	Shredders/ Total
SS 1024-BCA	10241	2	40	2	0.693	2.000	0.000	6.600	50.00%	0	0
SS 1041-BCA	10255	8	160	3	0.974	2.462	1.000	5.963	50.00%	0	0
SS 1017-BCA	10258	8	160	5	1.560	4.571	0.333	6.825	25.00%	0	0
SS 1011-BCA	10259	8	160	3	0.900	2.133	0.333	5.875	62.50%	0	0
SS 1032-BCA	10231	9	180	12	2.351	9.000	0.125	5.367	44.44%	2	0
SS 1005-BCA	10261	9	180	6	1.677	4.765	1.000	4.900	33.33%	0	0
SS 1022-BCA	10240	10	200	6	1.748	5.556	0.400	5.240	20.00%	0	0
SS 1012-BCA	10257	11	220	4	1.241	3.103	0.375	6.473	45.45%	0	0
SS 1031-BCA	10230	17	340	6	1.646	4.738	0.000	6.747	29.41%	0	0
SS 1034-BCA	10239	17	340	4	1.236	3.108	0.000	7.082	41.18%	0	0
SS 1021-BCA	10232	18	360	10	2.058	6.231	0.500	5.839	27.78%	0	0
SS 1009-BCA	10260	19	380	10	2.160	7.681	0.273	5.568	21.05%	0.25	0
SS 1033-BCA	10238	21	420	5	1.204	2.579	0.059	6.948	57.14%	0	0
SS 1010-BCA	10235	35	700	9	1.803	4.268	0.261	6.163	42.86%	0	0
SS 1002-BCA	10229	37	740	9	1.876	5.205	0.556	3.914	32.43%	0	0
SS 1001-BCA	10228	40	800	12	2.144	5.926	0.095	5.853	35.00%	0	0
SS 1025-BCA	10236	58	1160	16	2.096	4.861	0.026	6.672	39.66%	0	0
SS 1026-BCA	10237	59	1180	17	2.415	7.718	0.064	6.402	28.81%	0	0
SS 1028-BCA	10234	61	1220	13	2.101	5.751	0.182	6.639	32.79%	0.056	0
SS 1042-BCA	10233	97	1940	17	2.425	8.769	0.128	5.478	21.65%	0.05	0
SS 1029-BCA	10227	115	2300	21	2.343	6.206	0.615	5.586	34.78%	0.2	0

Table 9. Macroinvertebrate Community Metrics (2010)

Station	Richness	Abundance per m2	Evenness	Shannon-Weiner	EPT
REM01	7	366	0.765	1.489	0.000
REM02	21	661	0.557	1.696	0.067
REM03	18	1872	0.556	1.606	0.022
REM04	8	395	0.599	1.245	0.008
REM05	2	5	0.722	0.500	NA
REM06a	7	148	0.750	1.459	0.000
REM07	8	43	0.752	1.564	0.118
REM08c	19	769	0.642	1.891	0.130
REM09	12	477	0.499	1.241	0.036
REM10	9	488	0.746	1.640	0.500
REM11	7	97	0.738	1.435	0.063
REM12	10	383	0.605	1.394	0.127
REM13	5	645	0.632	1.017	0.000
REM14	4	780	0.368	0.510	0.000
REM15	7	204	0.624	1.214	0.067
REM16	9	70	0.703	1.545	0.143
REM17	4	212	0.825	1.144	0.222
REM18a	10	534	0.530	1.220	0.056
REM19	10	296	0.629	1.448	0.241
REM20	6	930	0.577	1.034	0.000
SLR03	22	1306	0.455	1.408	0.056
SLR11	28	1160	0.563	1.875	0.098
SLR20	15	563	0.604	1.636	0.071
SLR30	18	456	0.620	1.793	0.513
SLR37	10	454	0.617	1.421	0.268
SLR47	19	481	0.631	1.859	0.286
SLR52	11	460	0.696	1.668	0.157
SLR65	21	1107	0.631	1.920	1.389
SLR70	16	889	0.571	1.584	0.891

APPENDICES

APPENDIX A:

SAMPLE ANALYSIS PLAN (SAP)

Sampling and Analysis Plan

For 40th Avenue West

Stantec Project #: 193702726

40th Avenue West Remediation-to-Restoration Project
Duluth, Minnesota

Prepared for: United States Fish and Wildlife Service

Prepared by:

2355 Highway 36 West
St. Paul, Minnesota 55113
(651) 636-4600

August 29, 2014

SAMPLING AND ANALYSIS PLAN
40TH AVENUE WEST REMEDIATION-TO-RESTORATION PROJECT

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Site Name 1
1.2 Site Location 1
1.3 Site Background 2
2 PROJECT MANGEMENT 3
2.1 Project Organization 3
3 PROJECT DATA QUALITY OBJECTIVES 4
3.1 Problem Definition 4
3.2 Project Tasks 4
3.3 Sediment Sampling 5
3.4 Near Surface Water Sampling 6
3.5 Reporting 7
3.6 Work Schedule 7
4 DATA QUALITY 8
4.1 Data Quality Indicators 8
4.1.1 Data Reconciliation 8
4.2 Special Training Requirements and Certification 9
4.2.1 Special Training 9
4.2.2 Laboratory Certification 9
4.3 Document Dissemination 9
4.4 Data Reporting 9
4.4.1 Field Data 9
4.4.2 Laboratory Data 10
4.5 Data Review and Validation 10
4.5.1 Data Review 10
4.5.2 Data Validation 10
4.6 Data Management 11
4.6.1 Field Log Books 11
4.6.2 Final Project File 11
5 DATA GENERATION AND ACQUISITION 12
5.1 Sampling Procedures and Methods 12
5.2 Locations 12
5.3 Custody Procedures 12
5.3.1 Field Custody and Documentation Procedures 12
5.3.1.1 Field Logbook 12

5.3.1.2 Photographs 13
5.3.1.3 Chain-of-Custody 13
5.3.1.4 Field Custody Procedures 13
5.3.2 Laboratory Custody Procedures 14
5.3.3 Project File 14
5.4 Analytical Methods 15
5.4.1 Field Analytical Procedures 15
6 SAMPLING ANALYSIS 16
6.1 Sediment Sampling 16
6.2 Near Surface Water Sampling 17
7 FIELD METHODS AND PROCEDURES 18
7.1 Field Equipment 18
7.1.1 Field Equipment List 18
7.1.2 Field Equipment Calibration 18
7.2 Field Logbooks 18
7.3 Sediment Sampling Procedures 18
7.4 Near Surface Water Sampling Procedures 18
7.5 Decontamination Procedures 18
7.6 Field Corrective Action 19
7.7 Disposal of Residual Material 19
8 SAMPLE DOCUMENTATION AND SHIPMENT 20
8.1 Field Notes 20
8.2 Sample Labeling 20
8.2.1 Sample Designation 20
8.2.1.1 Sediment Sample Identification 20
8.2.1.2 Near Surface Water Sample Identification 21
8.3 Sample CoC 21
9 QUALITY CONTROL 22
9.1 Field Duplicates 22
9.2 Rinsate Blanks 22
9.3 Field Blanks 22
9.4 MS/MSD 22
9.5 Field Quality Control Checks 22
9.6 Laboratory Quality Control Checks 22

10 FIELD VARIANCES 24

11 HEALTH AND SAFETY PROCEDURES 25

FIGURES

Figure 1 Site Location Map
Figure 2 Project Organization Chart
Figure 3 Proposed Sediment and Near Surface Water Sample Location Map

TABLES

Table 1 Sample Analytical Parameters
Table 2 Data Validation Acceptance Criteria
Table 3 Laboratory Method Detection and Reporting Limits

APPENDICES (Under separate cover)

Appendix A Stantec Standard Operating Procedures
Appendix B Pace Analytical Quality Assurance Manual
Appendix C Great Lakes Environmental Center, Inc. Quality Manual – Toxicology Laboratory
Appendix D Pace Analytical Data Validation Qualifier Footnotes

ATTACHMENTS (Under separate Cover)

Attachment A MPCA Sediment Sampling Criteria for SLR AOC RI Areas
Attachment B Stantec Site Health and Safety Plan

SAMPLING AND ANALYSIS PLAN
40TH AVENUE WEST REMEDIATION-TO-RESTORATION PROJECT

1 INTRODUCTION

This Sampling and Analysis Plan (SAP) has been prepared on behalf of the United States Fish and Wildlife Service (USFWS) and describes the sampling, analysis, and quality assurance programs that Stantec Consulting Services, Inc. (Stantec) will adhere to during environmental and biological sampling at the 40th Avenue West Remediation-to-Restoration Project located in Duluth, Minnesota (Site). The primary objective of work done under this SAP is to collect and evaluate environmental chemistry, aquatic toxicity, and benthic community samples in sediment and environmental chemistry samples in near surface water to aid in evaluating the risk and potential toxicity to sediment-dwelling organisms. Risk and potential toxicity will be based primarily on a comparison of sediment contaminant concentrations to screening values that are predictive of toxicity to benthic organisms. This comparison is intended to establish causality between environmental pollutants and benthic toxicity that may also be used by other agencies and projects outside of the Site.

The purpose of the remediation-to-restoration process is to implement remediation activities to address sediment contamination, while also utilizing restoration projects that best fit the proposed ecological goal for the Site of ultimately eliminating beneficial use impairments (BUIs). Using information provided in *An Ecological Design for the 40th Avenue West Remediation-to-Restoration Project* (National Resources Research Institute, University of Minnesota Duluth; revised October 2012), seven BUIs have been identified for the Site:

- Loss of fish habitat;
- Loss of wildlife habitat;
- Degraded fish populations;
- Degraded wildlife populations;
- Degradation of benthos;
- Fish tumors; and
- Fish deformities.

Proposed restoration activities will consist of relocating sediments within the Site to provide deeper channels for fish passage, relocating sediments as areas of fill placement for wildlife habitats, and softening the shoreline adjacent to Oneota Street and Erie Pier.

Any required changes to the SAP reflecting the changing conditions encountered during the site characterization and the information gained as the work progresses will be communicated and approved by the entities listed in Section 2.1.

1.1 Site Name

The Site name is the 40th Avenue West Remediation-to-Restoration Project.

1.2 Site Location

The Site is located at the confluence of the St. Louis River (SLR) and St. Louis Bay (at the approximate intersections of 40th Avenue West and Oneota Street) Duluth, St. Louis County, Minnesota. The Site lies in an industrial section within the City boundaries and occupies approximately 159 acres in Saint Louis Bay. Based on a water surface elevation of 601.1 feet above mean sea level (msl); depth to sediment at the Site ranges between 3.75 and 30.5 feet below msl. **Figure 1** illustrates the Site location.

1.3 Site Background

The lower twenty-one miles of the St. Louis River form the St. Louis River estuary; this area has been utilized for over 100 years as a commercial and industrial Great Lakes port. The estuary is considered to be a significant source of biological productivity for western Lake Superior, and provides valuable wetland, sand beach, forested, and aquatic habitats for a variety of fish and wildlife communities.

The lower St. Louis River and surrounding watershed were designated an Area of Concern (AOC) in 1989 due to the presence of chemical contaminants, poor water quality, reduced fish and wildlife populations, and habitat loss. The St. Louis River Alliance was formed in 1996 to facilitate meeting the needs of the AOC, and as a result, the *Lower St. Louis River Habitat Plan* was created in 2002 to facilitate resource management and conservation to sustain biological productivity, native biodiversity, and ecological integrity. The purpose of the remediation to restoration plan was to implement remediation activities to address sediment contamination and subsequent restoration projects that are best suited for the ecological considerations of the AOC.

To document the first steps of the remediation-to-restoration process, *An Ecological Design for the 40th Avenue West Remediation-to-Restoration Project* (National Resources Research Institute, University of Minnesota Duluth; revised October 2012) was completed for the Site. Based on information provided in this report, the Site is considered to currently consist of emergent marsh (considered to be the most diverse of the three aquatic plant communities), floating leaf aquatic bed (the second most diverse, consisting of submerged, and floating-leaf aquatic plants), and submerged aquatic bed (consisting of submerged aquatic plants mixed with occasional free-floating plants) habitat conditions.

Substrate (i.e. sediment) data were also collected during this investigation and broken into thirteen descriptive classes. Sediment types were classified by texture as gauged by field staff. To simplify the descriptive process, these classes were grouped into three broader classes consisting of sand (coarse material and other hard substrates), clay/silt (finer-texture substrates), and muck (fine and coarse organic material).

The Site was further characterized into 4 water depth classes for habitat characterization: shallow (0-0.65 meters (m)); intermediate (0.65-1.65 m); deep (1.6-2.5 m); and a disphotic zone, below which no vegetation occurs. Shallow, intermediate, and deep habitat zones were divided into low energy and high energy locations to assess changes in aerial size to a particular habitat for plant, macro invertebrate, aviary, and/or other ecological response data associated with the Site. Utilizing aquatic plant, substrate, and habitat class based on depth/energy, potential habitat restoration scenarios were proposed for the Site.

2 PROJECT MANGEMENT

2.1 Project Organization

The project organization will be structured as indicated on **Figure 2**. This organization chart identifies the roles and responsibilities of those individuals involved with the project, their affiliation, and a structure for lines of authority and reporting. The organization chart includes the following members:

- United States Fish and Wildlife Service (USFWS) Project Manager;
- Minnesota Pollution Control Agency (MPCA) Project Site Leader;
- Jewell and Associate Engineers Inc., Project Manager;
- Stantec Project Manager;
- Stantec Field Staff Manager;
- Stantec Quality Assurance Officer;
- Stantec Site Manager;
- Environmental Chemistry, Aquatic Toxicity, and Benthic Community Laboratories; and
- Stantec Data Validator.

3 PROJECT DATA QUALITY OBJECTIVES

The objective of the SAP is to collect sediment environmental chemistry, aquatic toxicity, benthic community; tissue analysis of *Lumbriculus variegatus*, and particle size samples for laboratory analysis. Results of this analysis will be utilized to evaluate remediation alternatives in conjunction with restoration alternatives that will achieve specific habitat goals.

3.1 Problem Definition

The remediation-to-restoration process is intended to implement remediation activities to address limiting factors such as sediment contamination in conjunction with restoration projects that best complement the desired ecological vision. Environmental chemistry, aquatic toxicity, and benthic community sample collection are the beginning phases of a feasibility study that will evaluate remediation alternatives in conjunction with restoration alternatives that will achieve specific habitat goals. Sediment quality is an important component as the results of this sampling will aid in determining those substrate materials that can remain in place and those that should be removed or re-located in order to achieve these goals.

Although the MPCA does not have specific sediment quality standards for projects located within Minnesota, specific indicators can be used to help determine if aquatic ecosystems are being protected and/or restored. As a means of summarizing these sediment quality indicators, the MPCA created numerical sediment quality targets (SQTs) for use in the SLR AOC for protection of benthic invertebrates, as detailed in the *Guidance for the Use and Application of Sediment Quality Targets for the Protection of Sediment-Dwelling Organisms in Minnesota* (MPCA, February 2007). The SQTs are to be used as a management tool in conjunction with other sediment quality use indicators, taking into consideration geochemical characteristics, sediment toxicity, benthic invertebrate community structure, and tissue residue chemistry. SQTs are broken into two categories:

- Level I SQTs: Intended to identify contaminant concentrations below which harmful effects on sediment-dwelling organisms (i.e. benthic invertebrates) are unlikely to be observed; and
- Level II SQTs: Intended to identify contaminant concentrations above which harmful effects on sediment-dwelling organisms are likely to be observed.

For the purpose of this SAP, Level I SQTs will be utilized as a management tool to evaluate risk and potential toxicity. The MPCA Sediment Sampling Criteria for SLR AOC RI Areas is included as **Attachment A**.

3.2 Project Tasks

Project tasks supported by this SAP include:

- Preparation of a site-specific Site Health and Safety Plan (HASP);
- Environmental chemistry, aquatic toxicity, and benthic community sediment sampling;
- Environmental chemistry near surface water sampling; and
- Preparation of a Data Results Report.

Sediment sampling completed in the above tasks will involve analysis of the following chemical, aquatic toxicity, and benthic community assessment parameters:

- Chemical analysis including:
  - Polycyclic Aromatic Hydrocarbons (PAHs);
  - Polychlorinated Biphenyls (PCBs) (preferentially calculated as congener sums);
  - Polychlorinated Dibenzodioxins and Furans(PCDD/F);
  - Resource Conservation and Recovery Act (RCRA) metals, including:
    - Arsenic;
    - Cadmium;
    - Chromium;
    - Copper;
    - Lead;
    - Mercury;
    - Nickel; and
    - Zinc;
- Bioassay analysis, including:
  - 28-day whole sediment toxicity using *Hyalella Azteca*;
  - 10-day whole sediment toxicity using *Chironomus dilutus*;
  - 28-day survival/bioaccumulation using *Lumbriculus variegatus*;
    - Tissue analyses on *Lumbriculus variegatus*: metals;
    - Tissue analyses on *Lumbriculus variegatus*: PAHs;
    - Tissue analyses on *Lumbriculus variegatus*: PCB Congeners;
    - Tissue analyses on Lumbriculus variegatus: Dioxin/Furan;
- Benthic community analysis;
- Total Organic Carbon; and
- Particle size distribution.

Near surface water sampling completed in the above tasks will involve analysis of the following chemical parameters:

- Ammonia; and
- Total Sulfide.

Chemical analysis of ammonia and total sulfide in near surface water samples will provide a better understanding of the risk that current sediment quality poses to beneficial fish and wildlife habitat. Woody debris and/or wood waste are considered conditions that may exhibit an increased risk for high ammonia and sulfide conditions. These analyses will aid in determining if substrate materials (woody debris or wood waste) should be considered for removal during restoration activities or if laboratory analysis suggests that these materials can remain in place.

3.3 Sediment Sampling

Sediment samples will be collected for environmental chemistry, aquatic toxicity, and benthic community analysis. For the purpose of this SAP, sediment will be collected from established sample and reference locations illustrated in **Figure 3**; the number of sediment samples and the sediment collection depth will vary according to the sample location (**Table 1**). Sediment sampling locations will be field verified to determine woody debris, wood waste or other submerged obstructions; woody debris and wood waste are not considered suitable substrate for vegetation growth. If wood waste is encountered during sampling, sediment and/or near surface water samples will not be collected from the sediment surface. However, sample collection will continue in this location to document the wood waste depth. A sample beneath the woody debris or wood waste may be collected for laboratory analysis to characterize native material. Those sample locations containing

woody debris or wood waste will be collected and archived, with submittal for laboratory analysis pending discussion of field observations with the individuals listed in the project organization chart (Figure 2). Woody debris or wood waste identified during sample collection will be removed during restoration activities and replaced with clean material.

The methodology used to collect samples will be based on the target sample depth. Surface samples (i.e. the horizon immediately at the sediment/water interface to a maximum depth of 15 centimeters (cm)) for environmental chemistry and biological analysis will be collected with an Ekman, ponar, or Van Veen grab sampler. Sample collection for environmental chemistry from target depths greater than 15 cm (50, 100, and 200 cm) will use geotechnical equipment sampling equipment such as a vibrocore or hollow stem augers with a lined, split spoon sampler. The equipment used for collection of these samples at depth will require that the penetration and recovery depth can be confirmed. Aquatic toxicity and benthic community analysis samples will be collected prior to collecting samples for environmental chemistry. In areas within identified sediment dredge/cuts of 2 and 9 feet below the water surface elevation, the bottom sample interval will be relocated to two feet below the bottom of the cut area, or targeted depths of either120cm (for 2-foot cuts) or 335 cm (for 9-foot cuts), respectively. For sample locations within a sediment dredge/cut area of 6 feet below the water surface elevation, a fifth sample interval will be collected two feet below the bottom of the cut area, or a target depth of 245 cm. Figure 1 and Table 1 identifies those sample locations contained within sediment dredge/cut areas.

Approximately 12 liters (L) of sediment from the prescribed depth horizon will be collected and combined in stainless steel bowls to obtain a composite sample for aquatic toxicity analysis. Homogenized sediments will be transferred to laboratory supplied sample containers for shipment.

An additional aliquot of approximately 12 L sediment will be collected for benthic community assessments. Sediment collected for benthic community analysis will be rinsed and sieved in the field using a 500 micron mesh screen. Sieved material will be transferred to a properly labeled plastic jar containing 10% buffered formalin (or equivalent).

Sample collection for chemical analysis will be based on volumes provided in Section 6.1. Sediment from the prescribed depth horizon will be collected and homogenized in stainless steel bowls to obtain a composite sample. Homogenized sediments will be transferred to laboratory supplied sample containers for shipment. All sediment sample locations will be identified in the field using global positioning systems (GPS) coordinates. Additional detail describing sample collection techniques is provided in Stantec Standard Operating Procedures (SOPs) included as **Appendix A**.

3.4 Near Surface Water Sampling

Near surface water samples will be collected for ammonia and sulfide analysis. For the purpose of this SAP, near surface water samples will be collected from prescribed sample depths identified between 1 and 2 inches above the sediment/water interface. Table 1 summarizes sample locations where near surface water will be collected. Near surface water samples will be collected with a peristaltic pump connected to a length of poly tubing and attached to a length of polyvinyl chloride (PVC) pipe. The PVC pipe will have visible graduated markings and a weighted bottom to determine the sediment/water interface. Field parameters will be collected with a water quality meter (YSI 556 or equivalent) and a flow through cell to monitor turbidity spikes that may interfere with laboratory results. Near surface water samples will be collected once field readings have stabilized to within 10 percent (%). All near surface water sample locations will be identified in the

field using GPS coordinates provided by the United States Army Corps of Engineers (USACOE). Near surface water sample locations are illustrated in Figure 3.

3.5 Reporting

The results of sediment and near surface water sampling activities conducted under this SAP will be summarized in a Data Results Report and submitted to USFWS.

3.6 Work Schedule

The tasks included in this project will be scheduled in accordance with approval from the USACOE.

4 DATA QUALITY

The overall Quality Assurance (QA) objectives are to develop and implement procedures for field sampling, CoC, laboratory analysis, and reporting that will provide the level of data required for determining the characteristics and delineation status of the various environmental media provided in Section 4.2. Specific procedures for sampling, CoC, laboratory instruments calibration, laboratory analysis, reporting of data, internal QC, audits, preventive maintenance of field equipment and corrective action are described in other sections of this SAP.

4.1 Data Quality Indicators

Data collected will be validated in terms of the following Data Quality Indicators (DQI):

- Accuracy, assessed for environmental chemistry through the use of trip blanks to assess the potential of cross contamination during sample transport to the laboratory;
- Precision, measured for environmental chemistry through field duplicates and matrix spikes and matrix spike duplicates (MS/MSD) and the evaluation of the relative percent differences (RPD) between duplicate pairs. Precision will be measured for aquatic toxicity and benthic community analysis through the use of two reference sample locations, identified in Figure 3;
- Completeness. The field completeness goal for this project is greater than 95%;
- Representativeness, including environmental chemistry analysis of rinsate blanks and field blanks, as well as field instrument calibration and documentation reviews;
- Comparability; and
- Sensitivity, utilizing method detection limits (MDLs) identified, measured, and reported with a 99% confidence, given that the analyte concentration is greater than zero, and is determined from repeated analysis of a sample in a given matrix containing the analyte. The reporting limit (RL) greater than or equal to the lowest standard (i.e. Level 1 Sediment Quality Targets (SQT); MPCA water quality standards; etc.) is used to establish the calibration curve. The laboratory will be required to set the lowest standard for the calibration curve at or below the RL; the laboratory will be required to document those circumstances (if any) where the required RL cannot be obtained due to technical issues or matrix interference.

For most chemical analysis, the EPA has established sampling, extraction, and analysis protocols for sediment and water. When available, these EPA protocols/methods will be used for chemical analysis, unless a modified EPA method has been previously approved by the MPCA. Laboratory MDLs have been determined as required in Title 40 of the Code of Federal Regulation (CFR) Part 136B. Validated laboratory analytical data for sediment and near surface water samples will be assessed according to action levels provided in **Table 2**; laboratory MDLs and RLs are summarized in **Table 3**.

4.1.1 Data Reconciliation

The QAO will determine whether field and analytical data or data sets meet the requirements necessary for decision making. As data are evaluated, anomalies in the data or data gaps may become apparent to the data users. Data generated by the sampling activities will be used to develop tables and graphic representations of the vertical and horizontal distribution of impacts in soil and groundwater and will be considered to be satisfied if the data are sufficient (based on the

quality of the data) to complete the demonstration of horizontal and vertical delineation of Site impacts. Data that do not meet laboratory acceptance criteria (if any) will be identified and appropriately noted in the project database. The QAO will make a determination on the usability of data that do not meet the identified criteria.

4.2 Special Training Requirements and Certification

4.2.1 Special Training

Field tasks will generally consist of sediment sampling and near surface water sampling. The Site Manager will ensure that personnel completing these activities have sufficient knowledge of watercraft safety and on-the-job training to follow the procedures required for the activities listed above. Field personnel have completed the Occupational Safety and Health Administration (OSHA)-approved basic 40-hour health and safety training, Hazardous Waste Operations and Emergency Response (HAZWOPER) course (and annual 8-hour refreshers of the same), and have read and understood the SAP and HASP, including the associated attachments for each document. Personnel training requirements and record retention requirements are included in the Site HASP, included as **Attachment B**.

The United States Army Corps of Engineers (USACE) has retained the environmental drilling contractor and will provide the required vessel(s) to complete sediment sampling and near surface water sampling. All vessels utilized for the scope of work described herein will be required to comply with USACE invasive species control guidelines.

4.2.2 Laboratory Certification

Samples for laboratory analysis will be shipped to fixed-base, off-site laboratories. For environmental chemistry analysis, the analytical laboratory for this project will be Pace Analytical Services, Inc (Pace), located in Minneapolis, Minnesota. Laboratory certifications for Pace are listed in Attachment VIA of the Quality Assurance Manual (QAM), provided as **Appendix B**.

For aquatic toxicity and benthic community analysis, the analytical laboratory for this project will be Great Lakes Environmental Center, Inc (GLEC), located in Traverse City, Michigan. Laboratory certifications for GLEC are listed in Attachment 1 of the Quality Manual – Toxicology Laboratory, provided as **Appendix C**.

4.3 Document Dissemination

Dissemination of the SAP and any revisions to the SAP will be the responsibility of the QAO or QAO-assigned designee.

4.4 Data Reporting

4.4.1 Field Data

Field measurements and observations will be recorded in accordance with Stantec SOPs provided in Appendix A.

4.4.2 Laboratory Data

The hardcopy and the electronic copy of the laboratory data will be reported following the format identified below. For this project, a QC summary package will be required. The contents of the QC summary package will include:

- Cover sheet;
- Laboratory case narrative;
- Cooler receipt forms;
- CoC copies;
- Analytical results;
- Surrogate summary forms;
- LCS summary forms; and
- Spike and laboratory duplicate summary forms.

If requested, the raw data package will consist of elements presented in the QC summary as well as the raw data. Raw data will include chromatograms, mass spectra, manual integration correction data, quantitation reports, calibration data, preparation logs and analytical logs.

Both laboratory and field data will be combined and summarized in final tables and graphs that are appropriate to the type of data and convey information to support the findings of the data collection program. In all cases, data will be clearly tabulated and presented in a consistent manner for comparison of common data sets.

4.5 Data Review and Validation

Data review will be completed by the Stantec Project Manager and data verification and validation by the QAO and/or QAO-assigned designee. The field procedures described in this SAP will be reviewed by the AECOM technical review to assess whether these activities were performed in a manner that is appropriate for accomplishing the project objectives. This assessment will include review of data followed by data verification and data validation. Stantec will perform data verification on 100% of the laboratory data to determine whether the data have been generated in accordance with the procedures identified in the SAP. Pace data validation qualifier footnotes are included as **Appendix D**.

4.5.1 Data Review

The Stantec Site Manager and/or Site Manager assigned designee will be responsible for confirming adherence to the following data review items:

- Sampling design;
- Sample collection procedures;
- Sample handling procedures;
- Analytical procedures;
- QC; and
- Instrument calibration.

4.5.2 Data Validation

The QAO or QAO-assigned designee will determine if field and analytical data or data sets meet the requirements necessary for decision making. As data are evaluated, anomalies in the data or data

gaps may become apparent to the data users. Data generated by the sampling activities will be used to develop tables and graphic representations of the vertical and horizontal distribution of impacts in soil and groundwater. The DQOs will be considered to be satisfied if the data are sufficient (based on the quality of the data) to complete the design of a remedy required for this project. Data that do not meet the data criteria (if any) will be identified and appropriately noted in the project database. The QAO will make a determination on the usability of data that do not meet the criteria.

4.6 Data Management

Project and field activity records, particularly those that directly support current or ongoing technical studies and activities, and provide historical evidence needed for later reviews and analyses, will be legible, identifiable, retrievable and protected against damage, deterioration or loss on a centralized hard copy file and/or MEDAD compliant databases.

4.6.1 Field Log Books

The Stantec Site Manager will be responsible for assigning log book numbers, tracking log book numbers, collecting log books, and filing the completed log books.

The title page of each logbook will contain the following:

- Log book number;
- Project name; and
- Project start date.

Details on field log books are provided in Section 5.3.1.1.

4.6.2 Final Project File

The final project file will be the central repository for all electronic and paper documents, which constitute data relevant to sampling and analysis activities as described in this SAP. The Stantec – Green Bay, Wisconsin office is the custodian of the project file and will maintain the contents of the file for the site activities, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports and data reviews in a secured area. Removal of the project file and any material within will be approved by the Stantec Project Manager or Stantec Field Staff Manager.

The final project file will include, at a minimum:

- Field logbooks;
- Field data and data deliverables;
- Photographs;
- Drawings;
- Laboratory data deliverables;
- Data review/validation reports;
- Data assessment reports;
- Progress reports. QA reports, interim project reports, etc.; and
- All custody documentation (tags, forms, air bills, etc.).

5 DATA GENERATION AND ACQUISITION

5.1 Sampling Procedures and Methods

Sampling procedures and methods are detailed in Stantec SOPs, included as Appendix A.

5.2 Locations

The location of reference, sediment, and near surface water sampling points will be surveyed and recorded using GPS coordinates following the Minnesota State Plane North, North American Datum of 1983 (NAD83) United States (US) feet; North American Vertical Datum of 1988 (NAVD88) US feet. GPS coordinates will be recorded to sub-meter accuracy. Sample locations are illustrated on Figure 3.

5.3 Custody Procedures

Sample custody is one of several factors necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the major requirements for admissibility, relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis and final project files. Final project files, including originals of all laboratory reports and purge files, are maintained under document control in a secure area.

A sample or project file is under your custody if:

- The item is in actual possession of a person;
- The item is in the view of the person after being in actual possession of the person;
- The item was in actual physical possession but is locked up to prevent tampering; or
- The item is in a designated and identified secure area.

5.3.1 Field Custody and Documentation Procedures

5.3.1.1 Field Logbook

Field logbooks will provide the means of recording data collecting activities performed during the investigation. As such, entries will be described in as much detail as possible so that a particular situation can be described without reliance on memory.

Field logbooks will be bound field survey books or notebooks. A project-specific document number will identify each logbook. The Site Manager will be responsible for assigning and tracking the numbers, as well as collecting and filing the completed books.

The title page of each logbook will contain the following:

- Log book number;
- Project name; and
- Project start date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather and names of all sampling team members present will be recorded. The names of visitors to the Site, field sampling or investigation team personnel, and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in permanent ink, signed, and dated. If an incorrect entry is made, the information will be crossed out with a single strike mark that is signed and dated by the person making the change. Whenever a sample is collected or a measurement is made, a detailed description of the location, which may include compass and distance measurements or GPS coordinates, will be recorded. The number of the photographs taken, if any, will also be noted. Equipment used to make measurements will be identified, along with the date of calibration.

At the end of each field day, a diagonal line should be drawn across the empty page space on the current working page, and the signature of the person making the entries along with the date will be placed on the diagonal line.

5.3.1.2 Photographs

If photographs are taken, a photograph log will be maintained in the field logbook detailing the time the photo was taken, the name of the photographer, the direction of view in the photo, the content of the photo and any significant points to observe in photo.

5.3.1.3 Chain-of-Custody

The purpose of the CoC procedure is to prevent misidentification of samples, prevent tampering of the samples during shipment and storage, allow easy identification of tampering, and allow for easy tracking of possession. If the CoC is broken at any time from sample collection through sample analysis, the QAO will be notified. The QAO is responsible for implementing corrective action and responsible for ensuring that all necessary documentation is completed.

If an incorrect entry is made on the CoC, the incorrect information will be crossed out with a single strike mark and the change initialed and dated by the person making the CoC change. The original COC will be submitted with the associated samples to the lab, while a copy will be kept by the sampling team and will be included in the field activity documentation file.

The laboratory will compare the samples entered on the CoC forms with the sample containers received by the laboratory. If the laboratory finds any discrepancies, the laboratory will contact the Site Manager for resolution. The CoC forms will be the primary source of information for the laboratory to enter data into the laboratory's sample tracking system. Sample cooler packaging is an integral part of field activities. Procedures for proper sample packaging will be followed as directed in Section 7.

A copy of laboratory CoCs are provided in the Pace QAM (Appendix B) and the GLEC Quality Manual – Toxicology Laboratory (Appendix C).

5.3.1.4 Field Custody Procedures

Samples will be collected following the procedures presented in Stantec SOPs (Appendix A). The equipment used to collect samples will be noted in the field logbook, along with the time the sample was collected, a description of the sample, the depth at which the sample was collected, the volume of sample collected and the number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive a unique sample identification number, will be noted in the field logbook and on the field sampling sheets, if applicable.

The sample packaging and shipment procedures summarized below will be followed to ensure that the samples will arrive at the laboratory with the CoC intact. The protocol for specific sample numbering and other sample designations are included in Section 8.

- The sample collector is personally responsible for the care and custody of the samples until they are relinquished or properly dispatched. Field procedures have been designed such that as few individuals as possible will handle the samples;

- All bottles will be identified by the use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample numbering system is presented in Section 8;
- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample tag because the ballpoint pen would not function in freezing weather. Sample labels will be affixed to the sample containers using clear tape;
- A properly completed CoC form will accompany all samples. The sample numbers and locations will be listed on the CoC form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to the permanent laboratory or to/from a secure storage area; and
- Samples will be properly packaged on ice at less than or equal to (≤)6 degree Celsius (°C) ± 2°C for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler.

5.3.2 Laboratory Custody Procedures

Laboratory custody procedures for sample receiving and login, sample storage and numbering, tracking during sample preparation and analysis and storage of data are described in the Pace QAM (Appendix B) and the GLEC Quality Manual – Toxicology Laboratory (Appendix C).

5.3.3 Project File

The final project file will be the central repository for all documents, which constitute data relevant to sampling and analysis activities as described in this SAP. The Stantec – Green Bay, Wisconsin office is the custodian of the project file and will maintain the content of the file for the site activities, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, and data reviews in a secured area. Field logbook entry will be conducted in accordance with Stantec SOP ESPA011 – Field Notebook.

The final project file will include at a minimum:

- Field logbooks;
- Field data and data deliverables;
- Photographs;
- Drawings;
- Laboratory data deliverables;
- Data review/validation reports;
- Data assessment reports;

- Progress reports, QA reports, interim project reports, etc.; and
- All custody documentation (tags, forms, air bills, etc.).

5.4 Analytical Methods

Analytical methods have been selected to provide adequate detection limits for compounds of interest, and for the final intended data usage. A list of anticipated laboratory methods and their corresponding detection limits can be found in the Section 6. All solid sample results will be reported on a dry weight basis as the methodology specifies. Laboratory SOPs are based on an analytical method published by the EPA, Standard Methods, or other recognized sources as available.

5.4.1 Field Analytical Procedures

Field analytical measurements for aqueous and soil samples and their respective field instrument are listed in the following table. Analytical procedures for field analyses are presented in Stantec SOP ESPA-005 – Low Flow Groundwater Sampling (Appendix A).

Sample Type	Field Measurement	Field Instrument
Aqueous	Dissolved oxygen (DO), oxygen reduction potential (ORP), specific conductivity, pH, and temperature	YSI ProPlus, YSI 556 Plus, or equivalent

Water quality parameters (DO, ORP, specific conductivity, pH, and temperature) will be collected during near surface water sampling following United States Environmental Protection Agency (USEPA) recommendations for stability. Water quality parameters are considered stabilized (generally within 10%) for three consecutive measurements taken at 3 to 5 minute intervals.

6 SAMPLING ANALYSIS

Analytical methods have been selected to provide adequate detection limits for compounds of interest, and for the final intended data usage. All solid sample results will be reported on a dry weight basis as the methodology specifies. Laboratory SOPs are based on an analytical method published by the EPA, Standard Methods, or other recognized sources as available.

The contract laboratory will implement the SOPs required for the preparation and analysis of each analyte listed below. These laboratory SOPs for sample preparation, cleanup, and analysis are based on EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update IIIB, June 2005, or consistent with all method requirements under the SDWA and other applicable methods. The analytical procedures will follow laboratory in-house limits as appropriate. The laboratory will report all detections above the MDL. Values above the MDL and below the RL will be qualified as estimated. MDLs were determined as outlined in 40 CFR, Part 136B. The RLs are typically three to five times the MDL (the MDL should be below half any applicable action level where achievable). Laboratory MDLs and RLs are summarized in Table 3.

6.1 Sediment Sampling

Sediment samples will be submitted for laboratory analysis as indicated in the table below.

Analyte	Method	Container Number, Size, and Type	Sample Preservatives	Hold Time
Environmental Chemistry Analysis				
PAHs	8270 SIM	4-ounce glass	≤6°C	14 days
PCBs (calculated as congener sums)	EPA 8082	4-ounce glass	≤6°C	1 year
RCRA Metals	EPA 6010/6020	4-ounce glass or polyethylene	None	180 days
PCDD/F	EPA 8290	4-ounce glass	≤6°C	30 days
Aquatic Toxicity Analysis				
28-day whole sediment toxicity	EPA 100.1	3-gallon plastic pail with cover	None	10 days
10-day whole sediment toxicity	EPA 100.2	3-gallon plastic pail with cover	None	10 days
28-day survival / bioaccumulation	EPA 100.3	3-gallon plastic pail with cover	None	10 days

Benthic Community Analysis	US EPA Assessment and Remediation of Contaminated Sediments (ARCS)	3-gallon plastic pail with cover	10% buffered formalin	10 days
Bioassay Analysis				
Tissue Analysis: metals	EPA 6020/7474	NA	NA	NA
Tissue Analysis: PAHs	EPA 8270D-SIM	NA	NA	NA
Tissue Analysis: PCB Congeners	EPA 8270D-SIM	NA	NA	NA
Total Organic Carbon	EPA 846-9060	NA	NA	NA
Particle Size Distribution	ASTM D-422	NA	NA	NA

NA: Not applicable, as GLEC will be responsible for maintaining the container size, preservation, and hold times during bioassay analysis.

6.2 Near Surface Water Sampling

Near surface water samples will be submitted for laboratory analysis as indicated in the table below.

Analyte	Method	Container Number, Size, and Type	Sample Preservatives	Hold Time
Chemical Analysis				
Ammonia	SM4500NH3/350.1	Glass or plastic	pH<2 H_2SO_4; ≤6°C	28 days
Sulfide, Total	SM4500S/9030	Glass or plastic	pH>9 NaOH; ZnOAc; ≤6°C	7 days

7 FIELD METHODS AND PROCEDURES

Where applicable, field methods and procedures in this section are detailed in the Stantec SOPs provided in Appendix A.

7.1 Field Equipment

7.1.1 Field Equipment List

The following equipment may be required for execution of the project objectives:

- GPS unit (Trimble or equivalent);
- Stainless steel bowls and hand tools;
- Eckman/Ponar/Van Veen sediment sampler;
- Vibracore (or equivalent) sediment sampler;
- 500 micron sieve;
- Peristaltic pump;
- 0.45 micron disposable, in-line field filters;
- Water quality meter (YSI 556 or equivalent) and flow through cell; and
- Other equipment as required.

7.1.2 Field Equipment Calibration

The field instruments, where applicable, will be calibrated as described in the manufacturer's manual and the procedures identified in the applicable SOPs. In general, calibration of field instruments will be performed daily at a minimum.

All calibration procedures performed will be documented in the field logbook and will include: the date/time of calibration; name of person performing the calibration; reference standard used; temperature at which readings were taken; and the readings. Multiple readings on one sample or standard, as well as readings on replicate samples, will likewise be documented.

7.2 Field Logbooks

All field activities will be documented in accordance with Section 5.3.1.1. Field logbook entry will be conducted in accordance with Stantec SOP ESPA011 – Field Notebook.

7.3 Sediment Sampling Procedures

Sediment sampling will be conducted in accordance with Stantec SOP ESPA014 – Sediment Sampling.

7.4 Near Surface Water Sampling Procedures

Near surface water sampling will be conducted following guidance within Stantec SOP ESPA005 – Low Flow Groundwater Sampling. Although the SOP attached specifically references groundwater sampling and sampling from well points, the low flow groundwater sampling procedures contained within the SOP are applicable and transferrable to collecting water samples as is described in Section 3.4.

7.5 Decontamination Procedures

Decontamination of equipment will be conducted in accordance with SOP ESPA002 – Decontamination Procedures.

7.6 Field Corrective Action

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the SAP, etc.) or if sampling and/or field analytical procedures require modification due to unexpected conditions. In general, the Site Manager or QAO may identify the need for corrective action. The field staff, in consultation with the Site Manager will recommend a corrective action. The Project Manager will approve the corrective measure (after consultation with and concurrence by the Representative and/or the IDEM Project Manager) that will be implemented by the field team. It will be the responsibility of the Site Manager to ensure the corrective action has been implemented. All corrective actions implemented will be documented in the field logbooks.

7.7 Disposal of Residual Material

Excess sediment (solids) and disposable, Level D safety equipment generated during the sampling event shall be handled, characterized, and disposed of as an Investigation Derived Waste (IDW). IDW will be contained and labeled in accordance with the ESPA303 – Waste Management Form. Stantec will be responsible for IDW characterization (solids only) and disposal.

8 SAMPLE DOCUMENTATION AND SHIPMENT

8.1 Field Notes

Measurements made and samples collected will be recorded in the field logbook. All entries will be made in permanent ink, signed and dated. If an incorrect entry is made, the information will be crossed out with a single strike mark that is signed and dated by the sampler. Whenever a sample is collected or a measurement is made, a detailed description of the location, which may include compass and distance measurements or GPS coordinates, will be recorded. The number of the photographs taken, if any, will also be noted. All equipment used to make measurements will be identified, along with the date of calibration.

8.2 Sample Labeling

Sample jars and vials will be clearly labeled with, at a minimum, the following information:

- Unique sample designation;
- Sample Type (discrete or composite);
- Sampler name or initials;
- Date sample collected;
- Time sample collected; and
- Analysis to be performed.

8.2.1 Sample Designation

The unique, site-specific sample number should consist of the following:

8.2.1.1 Sediment Sample Identification

Sediment samples will include sampling and analysis for aquatic toxicity, benthic community analysis, and environmental chemistry. Unique identification of sediment samples will be designated as follows:

Sample Location-Sample Type (Depth Interval in centimeters)

Examples:

- SS1032-CH (50cm)
- DUP-01-CH

Sample type designation list:

- SS – Sediment Sample
- DUP – Duplicate (samples will be submitted to laboratory blind)
- RF – Reference Location
- AT – Aquatic Toxicity
- BCA – Benthic Community Analysis
- CH – Environmental Chemistry
- MS – Matrix Spike
- MSD – Matrix Spike Duplicate
- TB – Trip Blank
- EB – Equipment Blank

8.2.1.2 Near Surface Water Sample Identification

Near surface water samples will be designated as follows:

Sample Type-Sample Location #

Examples:

- NSW1032-CH
- DUP-01-CH

Sample type designation list:

- NSW – Near Surface Water
- DUP – Duplicate (samples will be submitted blind)
- CH – Environmental Chemistry
- MS – Matrix Spike
- MSD – Matrix Spike Duplicate
- TB – Trip Blank
- EB – Equipment Blank

8.3 Sample CoC

A primary consideration for environmental data is the ability to demonstrate that samples have been obtained from specific locations and have reached the laboratory without alteration. Evidence of collection, shipment, laboratory receipt, and laboratory custody while samples are in the laboratory's possession will be documented by maintaining a CoC that records each sample and the individuals responsible for sample collection, shipment, and receipt at the project laboratory. Samples that are collected will be accompanied by a CoC Record. The following information will be recorded to complete the CoC Record:

- Project name and number;
- Name of sampler;
- Sample identifier/name, location, date and time collected, and sample type;
- Analyses requested;
- Special instructions and/or sample hazards, if applicable;
- Signature of sampler in the designated blocks, including date, time, and company; and
- Sample condition (including temperature) upon receipt as reported by the analytical laboratory.

Copies of CoC Records will be maintained by the Site Manager. Duplicates of all CoC Records will be retained as part of the Project File.

9 QUALITY CONTROL

9.1 Field Duplicates

Sample duplicates will be collected for environmental chemistry at rate of approximately one for every 20 analytical samples collected. Each duplicate set will be collected for each analysis to be run at that sampling location.

9.2 Rinsate Blanks

Rinsate blanks will be collected for environmental chemistry at rate of approximately one for each field crew per day of sampling.

9.3 Field Blanks

Field blanks will be collected for environmental chemistry at rate of approximately one for every 20 analytical samples collected.

9.4 MS/MSD

MS/MSD samples will be collected for environmental chemistry at rate of approximately one for every 20 analytical samples collected. Each MS/MSD set will be collected for each analysis to be run at that sampling location.

9.5 Field Quality Control Checks

The collection of field duplicates and QA duplicates for environmental chemistry laboratory analysis will allow an assessment of field sampling precision and bias. Collection of the samples will be in accordance with Section 6.

9.6 Laboratory Quality Control Checks

Laboratory QC checks are detailed in the Pace QAM (Appendix B) and GLEC Quality Manual – Toxicology Laboratory (Appendix C). Additionally, GLEC will follow guidelines established in the US EPA *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing* Manual (U.S. Army Corps of Engineers, February 1998). In general, the QC requirements include the following:

- Trip blanks;
- Reagent/preparation/calibration blanks (applicable to inorganic analysis);
- Instrument blanks;
- Initial calibration;
- Initial calibration verification;
- Continuing calibration verification;
- MDL verification;
- Method RL verification;
- MS/MSDs;
- Surrogate spikes;
- Laboratory duplicates;
- LCS/LCSD samples;
- Internal standard areas for Gas Chromatograph / Mass Spectrometer (GC/MS) analysis;
- Mass tuning for GC/MS analysis; and
- Batch control samples for aquatic toxicity and benthic community analysis.

All data obtained will be properly recorded. If requested, the data package will include a full deliverable package capable of allowing the recipient to reconstruct QC information and compare it to QC criteria. The laboratory will reanalyze any samples analyzed in non-conformance with the QC criteria, if sufficient volume is available. It is expected that sufficient volumes/weights of samples will be collected to allow for reanalysis when necessary. Data packages will be available in electronic form.

10 FIELD VARIANCES

As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the Representatives will be notified and a verbal approval will be obtained before implementing the changes. All variances or time delays will be documented on the ESPA002 – Variance/Time Delay Form (Appendix A). Modifications to the approved plan will be documented in the sampling project report.

11 HEALTH AND SAFETY PROCEDURES

Health and safety procedures are detailed in the Site HASP (Attachment B).

FIGURES

Figure 1

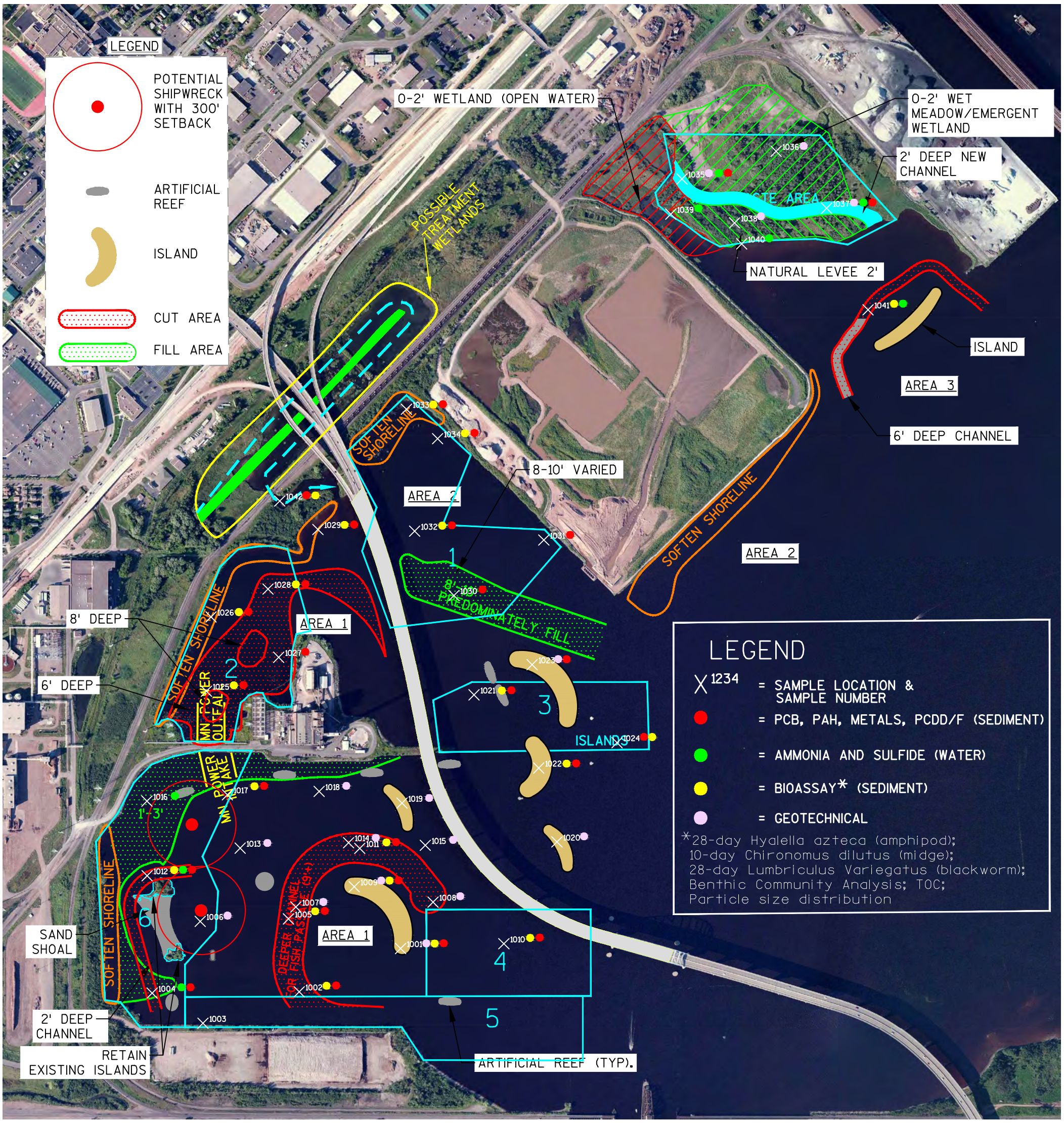
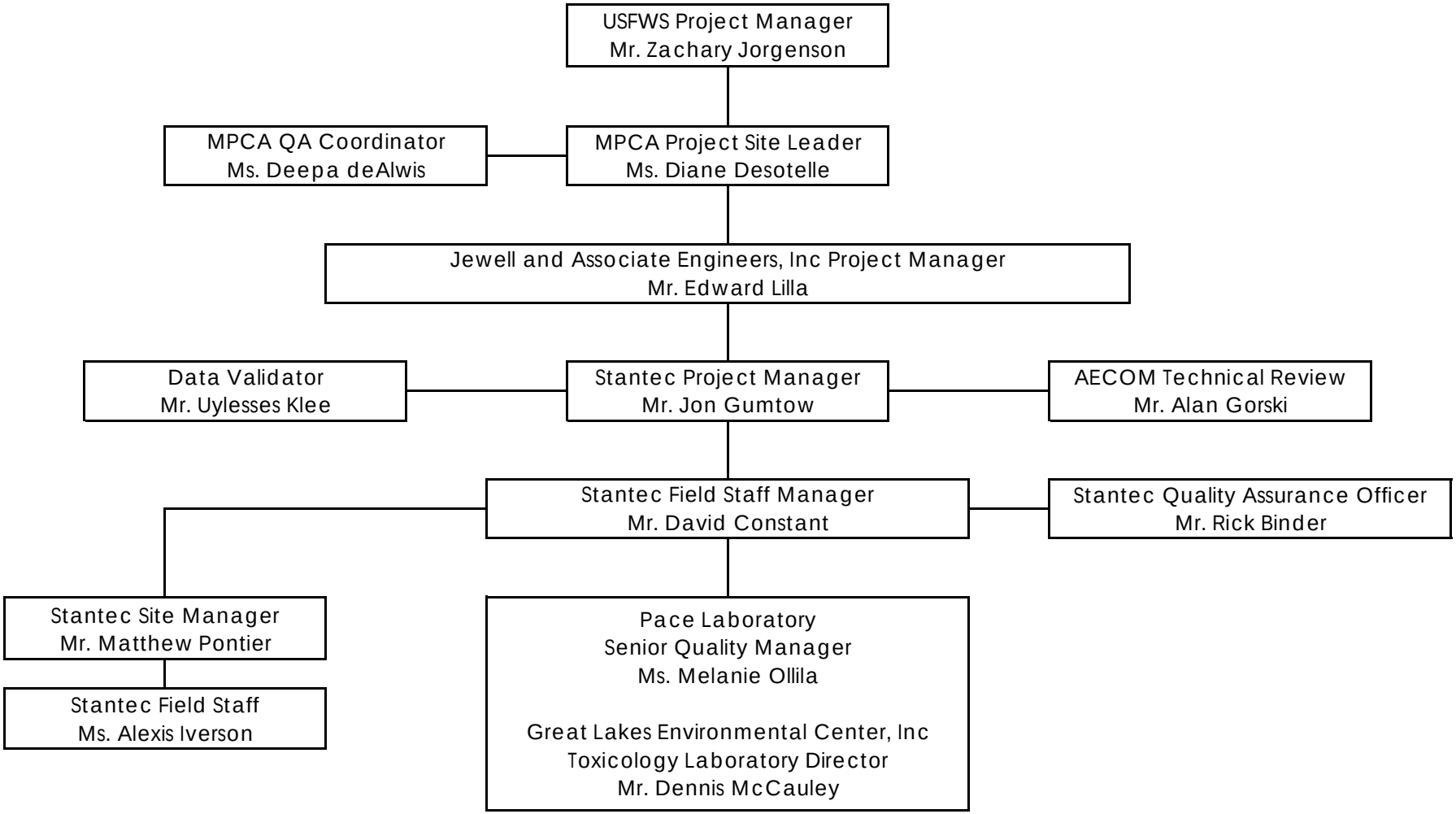
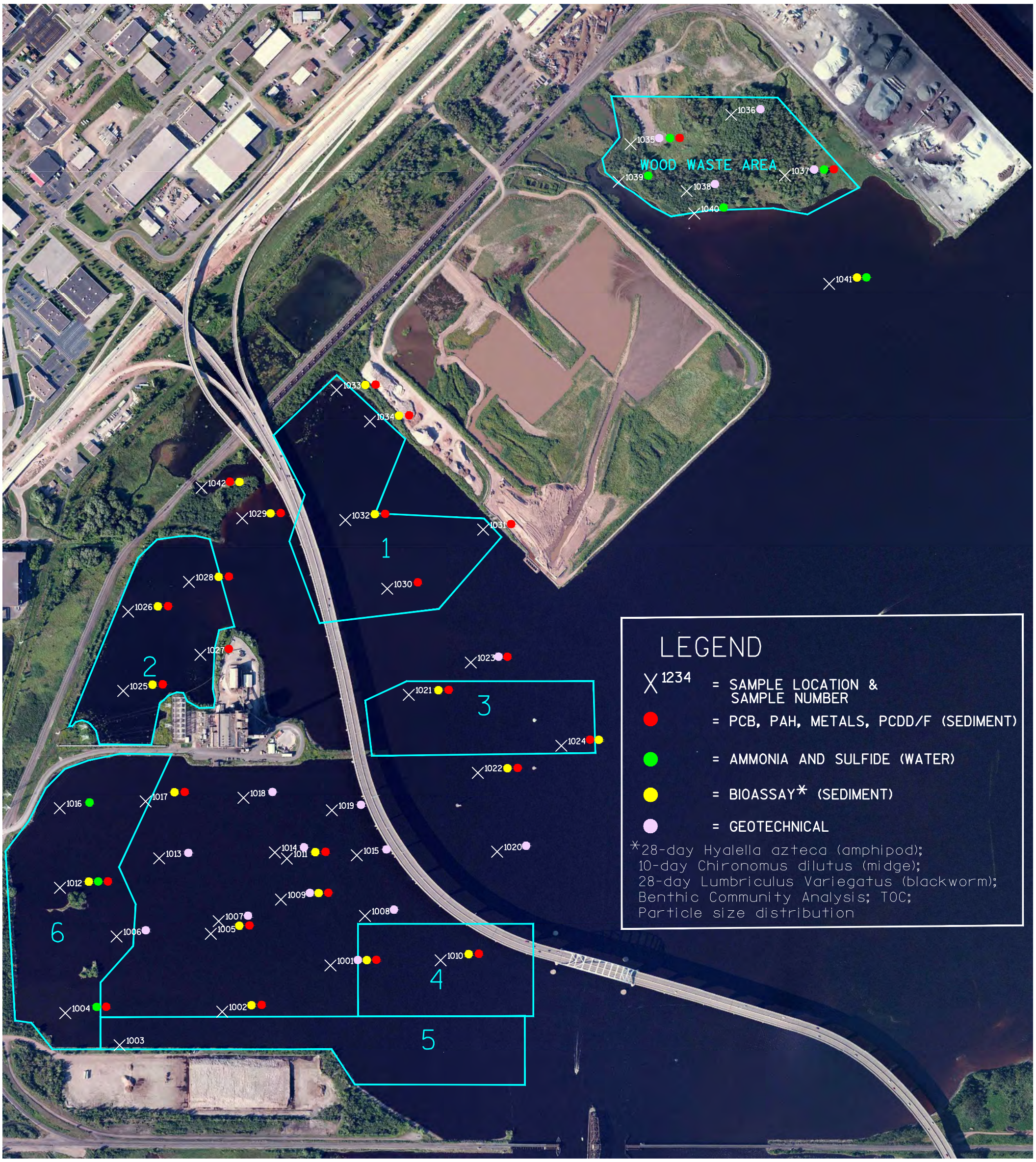

LEGEND
POTENTIAL SHIPWRECK WITH 300' SETBACK
ARTIFICIAL REEF
ISLAND
CUT AREA
FILL AREA
0-2' WETLAND (OPEN WATER)
0-2' WET MEADOW/EMERGENT WETLAND
2' DEEP NEW CHANNEL
SITE AREA
NATURAL LEVEE 2'
ISLAND
AREA 3
6' DEEP CHANNEL
POSSIBLE TREATMENT WETLANDS
SOFTEN SHORELINE
8-10' VARIED
AREA 2
8' PREDOMINATELY FILL
8' DEEP
6' DEEP
AREA 1
MN POWER OUTFALL
MN POWER INTAKE
ISLANDS
1'-3'
DEEPER CHANNEL FOR FISH PASSAGE
SAND SHOAL
2' DEEP CHANNEL
RETAIN EXISTING ISLANDS
ARTIFICIAL REEF (TYP).
LEGEND
1234 = SAMPLE LOCATION & SAMPLE NUMBER
= PCB, PAH, METALS, PCDD/F (SEDIMENT)
= AMMONIA AND SULFIDE (WATER)
= BIOASSAY* (SEDIMENT)
= GEOTECHNICAL
*28-day Hyalella azteca (amphipod);
10-day Chironomus dilutus (midge);
28-day Lumbriculus Variegatus (blackworm);
Benthic Community Analysis; TOC;
Particle size distribution

Figure 2
Project Organization Chart
Sampling and Analysis Plan
40th Avenue West Remediation-to-Restoration Project
Duluth, Minnesota



Stantec

Figure 3


WOOD WASTE AREA
1
2
3
4
5
6
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023
1024
1025
1026
1027
1028
1029
1030
1031
1032
1033
1034
1035
1036
1037
1038
1039
1040
1041
1042
LEGEND
1234 = SAMPLE LOCATION & SAMPLE NUMBER
= PCB, PAH, METALS, PCDD/F (SEDIMENT)
= AMMONIA AND SULFIDE (WATER)
= BIOASSAY* (SEDIMENT)
= GEOTECHNICAL
*28-day Hyalella azteca (amphipod);
10-day Chironomus dilutus (midge);
28-day Lumbriculus Variegatus (blackworm);
Benthic Community Analysis; TOC;
Particle size distribution

TABLES

Table 1
Sample Analtyical Parameters
40th Avenue West Remediation-to-Restoration Project
Duluth, Minnesota

Sample Location ID	Sample Area	Geotechnical	Test Methods						
			PCB	PAH	Metals	PCDD/F	Ammonia	Sulfide	Bioassay [2]
			Number of Samples per Sample Location [1]						
1001	5	1	2	2	2	2			1
1002	5		2	2	2	2			1
1003*	5		----- T B D -----						
1004	6		2	2	2	2	1	1	
1005	6		2	2	2	2			1
1006	6	1							
1007		1							
1008		1							
1009	4	1	2	2	2	2			1
1010	4		3	3	3	3			1
1011	4		3	3	3	3			1
1012	6		2	2	2	2	1	1	1
1013		1							
1014		1							
1015		1							
1016							1	1	
1017	6		2	2	2	2			1
1018		1							
1019		1							
1020		1							
1021	3		3	3	3	3			1
1022	3		3	3	3	3			1
1023	3	1	2	2	2	2			
1024	3		3	3	3	3			1
1025	2		3	3	3	3			1
1026	2		3	3	3	3			1
1027	2		4	4	4	4			
1028	2		4	4	4	4			1
1029	2		4	4	4	4			1
1030	1		2	2	2	2			
1031	1		3	3	3	3			
1032	1		3	3	3	3			1
1033	1		3	3	3	3			1
1034	1		3	3	3	3			1
1035	ww[3]	1	3	3	3	3	1	1	
1036	ww[3]	1							
1037	ww[3]	1	3	3	3	3	1	1	
1038	ww[3]	1							
1039	ww[3]						1	1	
1040	ww[3]		1	1	1	1	1	1	1
1041	ww[3]						1	1	TBD
1042			2	2	2	2			1
Reference			2	2	2	2			2
Duplicate			2	2	2	2			
MS/MSD			2	2	2	2			
		Total Samples	78	78	78	78	8	8	22

Notes:

1. Number of samples per locations corresponds to the following depths: 1 sample = surface; 2 samples = surface & 50 cm; 3 samples = surface, 50 cm & 100 cm; 4 samples = surface, 50 cm, 100 cm & 200 cm

2. 28-day Hyalella azteca (amphipod); 10-day Chironomus dilutus (midge); 28-day Lumbriculus Variegatus (blackworm); Benthic Community Analysis; TOC; Particle size distribution

3. ww = Wood Waste Area

MS/MSD = Matrix Spike/Matrix Spike Duplicate

* TBD - To Be Determined based on Field Observations

Table 2
Data Validation and Acceptance Criteria
Sampling and Analysis Plan

Data Validation Parameter	Acceptance Criteria	Guidelines for Corrective Action
Holding Time	Each sample should meet holding times. Holding times for chemical analysis are presented in Section 7 of the SAP.	Analytical results flagged for exceeding recognized method holding time flagged as H1, H2, H3, and/or H4, as appropriate. A slight exceedance may not be qualified at the discretion of the data validator. A complete list of holding time footnotes are included in Appendix D of the Sampling and Analysis Plan.
Trip and Equipment Blanks	Contaminants are not present in the blanks.	Concentrations reported below the reporting limit will be flagged as estimated (J). Flag values as (B) if the analyte was detected in the blank sample. Request that laboratory review data. Carefully consider type of blank, compounds present, and origin of contaminants. Modify sampling procedures or laboratory SOPs.
Field Duplicates	RPD for water = 20-30%, for solids = 20-30%.	Field duplicate exceeds RPD criteria. Review sampling procedures and request that laboratory review data.
Practical Quantitation Limits	Positive results are above the lowest practical quantitation limit. If dilution is required as a result of matrix interference, the practical quantitation limits will be adjusted by the laboratory and the lowest practical quantitation limits may not be achievable.	Concentrations reported below the reporting limit will be flagged as estimated (J). Review sensitivity data and discuss specific results with testing laboratory in a qualitative manner to determine if re-analysis or modification of procedures should be performed to meet desired objectives.
Matrix Spike/Matrix Spike Duplicate	RPD for water = 20%, for solids = 20%. SM4500NH3/350.1 Spike recoveries for water = 90%-110%; SM4500S/9030 Spike recoveries for water = 90%-110% 8270 SIM Spike recoveries for solids = 30%-150%: 6010/6020 Spike recoveries for solids = 75%-125%; 8082 Spike recoveries for solids = 35%-127% 8290 Spike recoveries for soilds = 70%-130%	Data are not qualified based on MS/MSD results alone. Verify that the associated LCS is within QC limits. Samples with matrix spike or matrix spike duplicates outside QC limits will be flagged with laboratory "M" footnote followed by a number (i.e. M2) specifying the type of QC failure. A complete list of surrogate recovery footnotes are included in Appendix D.
Surrogates	SM4500NH3/350.1 Spike recoveries for water = 90%-110%; SM4500S/9030 Spike recoveries for water = 90%-110% 8270 SIM Spike recoveries for soilds = 30%-150%: 8082 Spike recoveries for solids = 35%-126% 8290 Spike recoveries for soilds = 70%-130%	Samples with surrogate recoveries outside QC limits will be flagged with laboratory "S" footnote followed by a number (i.e. S3) specifying the type of QC failure. A complete list of surrogate recovery footnotes are included in Appendix D of the Sampling and Analysis Plan. In all cases, qualification of the data is at the discretion of the data validator, i.e., where dilutions are involved, the validator may determine that data qualifications are not necessary.
Laboratory Control Sample	SM4500NH3/350.1 LCS recoveries for water = 90%-110%; SM4500S/9030 LCS recoveries for water = 90%-110% 8270 SIM LCS recoveries for soilds = 43%-125%: 6010/6020 LCS recoveries for solids =80%-120%; 8082 LCS recoveries for solids = 65%-125% 8290 LCS recoveries for soilds = 70%-130%	Review data and discuss with laboratory. Re-analysis may be necessary. Data qualifications may be necessary at the discretion of the data validator.
General Quality of Data	Completeness of data should range between 90 and 100% complete.	Review completeness data and discuss results with testing laboratory in a qualitative manner to determine if re-analysis or modification of procedures should be performed to meet desired objectives.

Notes: Table 2 is to be used for data validation for each validation point, where applicable. Specific determinations of data validity should be based on review of the data and circumstances associated with the samples tested in accordance with National Functional Guidelines for Inorganic and Organic Data Review (2008/2010).

Laboratory data validation qualifiers, when applicable, are listed by predefined footnotes on the laboratory results. The description of these footnotes are included in Appendix D of the Sampling and Analysis Plan.

Specific Data Validation Qualifiers Listed Above

B The analyte was found in the associated blank, as well as in the sample.

J Analyte detected below reoprting limit, therefore result is an estimate

Table 3
Laboratory Method Detection Limits and Reporting Limits
Sampling and Analysis Plan

Laboratory Method 8270 SIM			
Target Analyte	Level 1 SQT (ug/kg)	Soils	
		RL (mg/kg)	MDL (mg/kg)
2-Methylnaphthalene	20	NA	NA
Acenaphthene	6.7	0.0010	0.0050
Acenapthylene	5.9	0.0010	0.0050
Anthracene	57	0.0010	0.0050
Fluorene	77	0.0010	0.0050
Naphthalene	180	0.0010	0.0050
Phenanthrene	200	0.0010	0.0050
Benz(a)anthracene	110	0.0010	0.0050
Benzo(a)pyrene	150	0.0010	0.0050
Chrysene	170	0.0010	0.0050
Dibenz(a,h)anthracene	33	0.0010	0.0050
Fluoranthene	420	0.0010	0.0050
Pyrene	200	0.0010	0.00023
Benzo(b)fluoranthene	-	0.0010	0.00028
Benzo(e)pyrene	-	0.0010	0.0050
Benzo(g,h,i)perylene	-	0.0010	0.0050
Benzo(k)fluoranthene	-	0.0010	0.0050
Indeno (1,2,3-cd)pyrene	-	0.0010	0.0050
Total PAHs	1600	NA	NA

Laboratory Method 6010/6020			
Target Analyte	Level 1 SQT (mg/kg)	Soils	
		RL (mg/kg)	MDL (mg/kg)
Arsenic	9.8	1.00/0.5	0.167/0.188
Cadmium	0.99	0.15/0.08	0.075/0.024
Chromium	43	0.50/0.50	0.076/0.173
Copper	32	0.50/0.50	0.056/0.250
Lead	36	1.0/0.10	0.072/0.030
Nickel	23	1.0/0.50	0.5/0.107
Zinc	120	1.0/5.00	0.31/1.15

Laboratory Method 7471			
Target Analyte	Level 1 SQT (mg/kg)	Soils	
		RL (mg/kg)	MDL (mg/kg)
Mercury	0.18	0.02	0.006

Method 8082A			
Target Analyte	Level 1 SQT (ug/kg)	Soils	
		RL (mg/kg)	MDL (mg/kg)
Aroclor 1016	NA	0.033	0.008
Aroclor 1221	NA	0.033	0.008
Aroclor 1232	NA	0.033	0.015
Aroclor 1242	NA	0.033	0.014
Aroclor 1248	NA	0.033	0.006
Aroclor 1254	NA	0.033	0.011
Aroclor 1260	NA	0.033	0.005
Aroclor 1262	NA	0.033	0.013
Aroclor 1268	NA	0.033	0.007
Total PCBs	60	NA	NA

Method 8280			
Target Analyte	Level 1 SQT (ng TEQ/kg)	Soils	
		RL (mg/kg)	MDL (mg/kg)
2,3,7,8-TCDF	0.85[1]	0.00100	0.00022
2,3,7,8-TCDD		0.00100	0.00016
1,2,3,7,8-PeCDF		0.00250	0.00009
2,3,4,7,8-PeCDF		0.00250	0.00019
1,2,3,7,8-PeCDD		0.00250	0.00016
1,2,3,4,7,8-HxCDF		0.00250	0.00025
1,2,3,6,7,8-HxCDF		0.00250	0.00009
2,3,4,6,7,8-HxCDF		0.00250	0.00022
1,2,3,7,8,9-HxCDF		0.00250	0.00044
1,2,3,4,7,8-HxCDD		0.00250	0.00017
1,2,3,6,7,8-HxCDD		0.00250	0.00023
1,2,3,7,8,9-HxCDD		0.00250	0.00017
1,2,3,4,6,7,8-HpCDF		0.00250	0.00106
1,2,3,4,7,8,9-HpCDF		0.00250	0.00068
1,2,3,4,6,7,8-HpCDD		0.00250	0.00063
OCDF		0.00500	0.00072
OCDD		0.00500	0.00034

Method 8280			
Target Analyte	Level 1 SQT	Water	
		RL (mg/l)	MDL (mg/l)
Ammonia as Nitrogen	-	0.04	0.02

Method 8280			
Target Analyte	Level 1 SQT	Water	
		RL (mg/l)	MDL (mg/l)
Sulfide	-	5	2.3

Notes:
NA = not applicable
SQT: Sediment Quality Target
RL: Reporting Limit
MDL: Method Detection Limit
TEQ = toxic equivalent
ng = nanogram
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
ug/mg = micrograms per kilogram
1: Value is based on a toxic equivalency factor (TEF) value for fish. There is current insufficient information to determine TEFs for invertebrates

APPENDIX B:

BORING REPORTS

BORING CONTRACTOR: Stantec	Stantec	SHEET 1 OF 27
		PROJECT NO.: 193702726
DRILLER:		HOLE NO.: 1001
Strata	**BORING REPORT**	SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 137cm
SOILS ENGINEER:		START DATE: 9-17-14/ 11:30
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-17-14 / 11:43
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 620' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 414021
	HAMMER FALL					EAST COORD. 2865183

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown clayey silt, trace wood, saturated									0cm - Brown clayey silt, trace wood, saturated 15cm - Brown / Gray clayey silt, saturated 50cm - end of boring Time Sample ID: 11:50 SS 1001 - CH (15cm) 11:55 SS 1001 - CH (50cm) 12:00 SS 1001 - CH AT (15cm) 12:00 SS 1001 - CH BCA (15cm)
15	Brown / gray clayey silt, saturated									
50	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 2 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1002
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 671cm
SOILS ENGINEER:		START DATE: 9-18-14/ 15:50
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14 / 16:00
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 620' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 413510
	HAMMER FALL					EAST COORD. 2862116

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Dark brown silt, saturated, odor									0cm - Dark brown silt, saturated, no odor 15cm - darker brown 50cm - end of boring Time Sample ID: 16:05 SS 1002 - CH (15cm) 16:10 SS 1002 - CH (50cm) 16:15 SS 1002 - CH AT (15cm) 16:15 SS 1002 - CH BCA (15cm)
15	Darker Brown									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec		SHEET 3 OF 27
		PROJECT NO.: 193702726
DRILLER:		HOLE NO.: 1004
Strata	**BORING REPORT**	SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 302cm
SOILS ENGINEER:		START DATE: 9-18-14/ 10:35
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14 / 10:40
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 620' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 413654
	HAMMER FALL					EAST COORD. 2861193

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0										0cm - Brown silt
2	Wood Waste									2cm - wood waste
	Brown Silt									50cm - end of boring Time Sample ID: 10:45 SS 1004 - CH (15cm) 10:50 SS 1004 - CH (50cm)
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 4 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1005
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 335cm
SOILS ENGINEER:		START DATE: 9-18-14/ 15:15
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14 / 15:20
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 620' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 414213
	HAMMER FALL					EAST COORD. 2862073

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Dark brown silt, saturated									0cm - dark brown silt, saturated
										5cm - dark brown / gray silt , saturated
5	Dark brown / gray silt, saturated									20 cm - SAA, wood
										22 cm - dark brown silt, some wood and peat, less moisture
										50cm - end of boring
20	SAA, wood									
22	Dark brown silt, some wood and peat, less moisture									
50	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

Stantec		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1009
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 308cm
SOILS ENGINEER:		START DATE: 9-18-14
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14
LOCATION: Duluth, MN		OFFSET:

BORING REPORT

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 624' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 414423
						EAST COORD. 2862511

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown very fine sandy silt, gravel, saturated									0cm - Brown very fine sandy silt, wood, gravel , saturated 15cm - dark brown fine sandy silt, gravel, wood, saturated 40cm - Refusal, end of boring
15	Dark brown fine sandy silt, gravel, wood, saturated									
40	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 6 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1010
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 436cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-17-14/ 10:30
		FINISH DATE: 9-17-14 / 10:45
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 620' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 414152
						EAST COORD. 2863585

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, trace very fine sand, saturated									0cm - Brown silt, trace very fine sand, saturated 15cm - Gray , SAA 24cm - Wood Chips 25cm - Gray, silt, trace fine sand 50cm - Gray, brown silt with black 100cm - end of boring
15	Gray, SAA									
24	Wood Chips									Time Sample ID: 10:50 SS 1010-CH (15cm) 10:55 SS 1010-CH (50cm) 11:00 SS 1010-CH (100cm) 11:05 SS 1010-CH AT (15cm) 11:05 SS 1010-CH BCA (15cm)
25	Gray, silt, trace fine sand									
50	Gray, brown silt with black peat									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 7 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1011
		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
SOILS ENGINEER:		START DATE: 9-18-14/ 14:10
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14 / 14:20
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 622' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 4147084
						EAST COORD. 2862558

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, saturated									0cm - Brown silt, saturated 13cm - Wood 15cm - Brown, fine, well sorted, sand 50cm - end of boring
13	Wood									Time Sample ID: 14:25 SS1011 - CH (15cm) 14:30 SS1011 - CH (50cm) 14:35 SS1011 - CH (100cm) 14:40 SS1011 - CH AT (15cm) 14:40 SS1011 - CH BCA (15cm)
15	Brown, fine, well sorted, sand									
50	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 8 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1012
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 302cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-18-14/ 11:25
		FINISH DATE: 9-18-14 / 11:30
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 620' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 414209
						EAST COORD. 2861295

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	SAMPLE TYPE AND NO.	SAMPLE PEN. INCH	SAMPLE REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt									0cm - brown silt
2	Silt, brown, wood (pulp)									2cm - silt, brown, wood (pulp) 40cm - wood chips 42cm - brown, silty clay, trace very fine sand 50cm - end of boring Time Sample ID: 11:35 SS 1012 - CH (15cm) 11:40 SS 1012 - CH (50cm) 11:45 SS 1012 - CH AT (15cm) 11:45 SS 1012 - CH BCA (15cm)
40	Wood chips									
42	Brown, silty clay, trace very fine sand									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 9 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1017
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 290cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-18-14/ 13:30
		FINISH DATE: 9-18-14 / 13:40
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 620' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 415073
						EAST COORD. 2168644

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	SAMPLE TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown / gray silt, trace fine sand									0cm - Brown/Gray silt, trace fine sand 20 cm - Brown, silt , very fine sand 25 cm - Brown sand, wood 50cm - end of boring Time Sample ID: 13:45 SS 1017 - CH (15cm) 13:50 SS 1017 - CH (50cm) 14:00 SS 1017 - CH AT (15cm) 14:00 SS 1017 - CH BCA (15cm)
20	Brown, silt, very fine sand									
25	Brown sand, wood									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 10 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1021
		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
SOILS ENGINEER:		START DATE: 9-15-14/ --
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-15-14 / 18:05
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 617' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 414021
					EAST COORD. 2865183

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt and clay, saturated, no odor									0cm - Brown silt and clay, saturated, no odor 10cm - Black clay with pieces of possible ash 20cm - sandy silt, trace clay, black 50cm - light brown, silt with clay, wood chips, saturated, no odor 100cm - End of Boring Time Sample ID: SS 1021 - CH (15cm) SS 1021 - CH (50cm) SS 1021 - CH (100cm)
10	Black clay with pieces of possible ash									
20	sandy silt, trace clay, black									
50	Light brown, silt with clay, wood chips, saturated, no odor									
100	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 11 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1022
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 579cm
SOILS ENGINEER:		START DATE: 9-16-14/ 08:20
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-16-14 / 08:25
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 624' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.: :
TIME	HAMMER WT.					NORTH COORD. 415564
	HAMMER FALL					EAST COORD. 2863604

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	silt, dark brown with very fine sand, some peat, saturated, no odor									0cm - silt, dark brown w/ very fine sand, some peat, saturated, no odor 15cm - silt, dark brown, wood chips, some very fine sand and clay 85cm - wood chips and clay 100cm - end of boring Time Sample ID: 8:30 SS 1022 - CH (15cm) 8:40 SS 1022 - CH (50cm) 8:50 SS 1022 - CH (100cm) 9:00 SS 1022 - CH AT (15cm) 9:00 SS 1022 - CH BCA (15cm)
15	Silt, dark brown, wood chips, some very fine sand and clay									
85	Wood chips and clay									
100	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 12 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1023
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 290cm
SOILS ENGINEER:		START DATE: 9-16-14/ 9:20
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-16-14 / 9:25
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 627' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 415865
					EAST COORD. 2864040

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, saturated, some very fine sand									0cm - Brown silt, saturated, some very fine sand 15cm - brown/gray fine sandy silt, some clay 50cm - end of boring Time Sample ID: 09:30 SS 1023 - CH (15cm) 09:40 SS 1023 - CH (50cm) 09:40 DUP-01-CH (50cm)
15	Brown / gray fine sandy silt, some clay									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 13 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1024
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 710cm
SOILS ENGINEER:		START DATE: 9-16-14/ 10:00
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-16-14 / 10:10
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 621' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 415444
	HAMMER FALL					EAST COORD. 2864311

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown, saturated silt, trace clay									0cm - Brown, saturated silt, trace clay 15cm - Brown / Gray clayey silt 50cm - brown gray silty clay 100 cm - end of boring
15	Brown / gray clayey silt									Time Sample ID: 10:15 SS 1024 - CH (15cm) 10:25 SS 1024 - CH (50cm) 10:35 SS 1024 - CH (100cm) 10:45 SS 1024 - CH BCA (15cm) 10:45 SS 1024 - CH AT (15cm)
50	Brown gray silty clay									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 14 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1025
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 198cm
SOILS ENGINEER:		START DATE: 9-16-14/ 11:08
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-16-14 / 11:15
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 617' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 415721
	HAMMER FALL					EAST COORD. 2861543

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown / gray silt									0cm - Brown/ gray silt
										15cm - Dark brown/gray silt, some wood
										50cm - Brown/ gray silt, find sand and peat, some wood
15	Dark brown / gray silt, some wood									100cm - end of boring
										Time Sample ID:
										11:20 SS 1025-CH (15cm)
										11:30 SS 1025-CH (50cm)
										11:40 SS 1025-CH (100cm)
										11:50 SS 1025-CH AT (15cm)
										11:50 SS 1025-CH BCA (15cm)
50	Brown / gray silt, fine sand and peat, some wood									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 15 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1026
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM:
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-16-14
		FINISH DATE: 9-16-14
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 622' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 416263
					EAST COORD. 2861592

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Saturated dark brown silt, very fine sand									0cm - saturated dark brown silt, very fine sand 15cm - dark brown / gray silt, fine sand, wood present, saturated, no odor 50cm - brown silty sand, moist, no odor 100cm - End of boring Time Sample ID: 14:20 SS 1026-CH (15cm) 14:30 SS 1026-CH (50cm) 14:40 SS 1026-CH (100cm) 14:45 SS 1026-CH BCA (15cm) 14:45 SS 1026-CH AT (15cm)
15	Dark brown / gray silt, fine sand, wood present, saturated, no odor									
50	Brown silty sand, moist, no odor									
100	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 16 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1027
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 198cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-16-14 / 16:00
		FINISH DATE: 9-16-14 / 16:15
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 629' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 416052
						EAST COORD. 2861995

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	SAMPLE TYPE AND NO.	SAMPLE PEN. INCH	SAMPLE REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Black sandy silt, possible ash									0cm - black sandy silt, possible ash
										190cm - Lighter brown, MCD - fine
										200cm - Endof boring
										Time Sample ID:
										16:20 SS 1027-CH (15cm)
										16:25 SS 1027-CH (50cm)
										16:30 SS 1027-CH (100cm)
										16:35 SS 1027-CH (200cm)
190	Lighter brown, MCD, fine sand									
200	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec		SHEET 17 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1028
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 162cm
SOILS ENGINEER:		START DATE: 9-16-14/ 14:55
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-16-14 / 15:05
LOCATION: Duluth, MN		OFFSET:

BORING REPORT

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 625' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 416411
					EAST COORD. 2861843

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, trace fine sand, some wood, saturated									0cm - Brown silt, trace fine sand, some wood, saturated
5	Darker Brown									5cm - darker brown
10	Fine sandy silt, trace clay, saturated									10cm - fine sandy silt, trace clay, black, saturated
										50cm - silty sand with clay, dark brown/black, less moisture
50	Silty sand with clay, dark brown/black, less moisture									100cm - lighter brown sand, less moisture, trace wood
										200cm - end of boring
										Time Sample ID:
										15:10 SS 1028 - CH (15cm)
										15:15 SS 1028 - CH (50cm)
										15:20 SS 1028 - CH (100cm)
										15:25 SS 1028 - CH (200cm)
100	Lighter brown sand, less moisture, trace wood									15:30 SS 1028 - CH BCA (15cm)
										15:30 SS 1028 - CH AT (15cm)
200	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec		SHEET 18 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1029
	BORING REPORT	SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 152cm
SOILS ENGINEER:		START DATE: 9-19-14 / 08:00
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-19-14 / 08:15
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 621' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.: 3
	HAMMER FALL				NORTH COORD. 416741
					EAST COORD. 2862320

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown / gray silty fine sand, saturated									0cm - brown/gray silty fine sand, saturated 12cm - brown and gray fine sand, saturated 75cm - brown fine sand, less moisture 150cm - reddish brown sand, higher water content 200cm - end of boring Time Sample ID: 08:20 SS 1029 - CH (15cm) 08:25 SS 1029 - CH (50cm) 08:30 SS 1029 - CH (100cm) 08:35 SS 1029 - CH (200cm) 08:40 SS 1029 - CH AT (15cm) 08:40 SS 1029 - CH BCA (15cm)
12	Brown and gray fine sand, satuarated									
75	Brown fine sand, less moisture									
150	Reddish brown sand, higher water content									
200	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 19 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1030
		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-15-14 / 16:45
		FINISH DATE: 9-15-14 / 16:55
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 621' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 416415
					EAST COORD. 2863284

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Soft, silt, dark brown, satuared									0cm - soft, silt, dark brown, saturated 15cm - silt and clay, mix of peat and very fine sand, no odor 50cm - end of boring Time Sample ID: 17:00 SS 1030 - CH (15cm) 17:10 SS 1030 - CH (50cm)
15	Silt and clay, mix of peat and very fine sand, no odor									
50	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 20 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1031
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 418cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-18-14 / 09:50
		FINISH DATE: 9-18-14 / 10:00
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 624' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.: 3
	HAMMER FALL					NORTH COORD. 416722
						EAST COORD. 2863788

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, satuared									0cm - Brown silt, saturated 22cm - brown sand and gravel, trace silt and clay 24cm- brown clayey silt, some fine sand, less moisture 100cm - End of Boring Time Sample ID: 10:05 SS 1031 - CH (15cm) 10:10 SS 1031 - CH (50cm) 10:15 SS 1031 - CH (100cm) 10:20 SS 1031 - CH AT (15cm) 10:20 SS 1031 - CH BCA (15cm)
22	Brown sand and gravel, trace sand and clay									
24	Brown clayey silt, some fien sand, less moisture									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 21 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1032
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 229cm
SOILS ENGINEER:		START DATE: 9-15-14/ 14:50
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-15-14 / 15:30
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 621.5' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.: :
TIME	HAMMER WT.					NORTH COORD. 41675311*(?)
	HAMMER FALL					EAST COORD. 2863071

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Dark brown soft, high water content, silt									0cm - dark brown soft, high water content. silt 15cm - homo silty clay, some wood chips 55cm - black silt and clay, trace fine sand, no odor 100cm - end of boring Time Sample ID: 15:40 SS 1032 - CH (15cm) 16:10 SS 1032 - CH (50cm) 16:15 SS 1032 - CH (100cm)
15	Homo silty clay, some wood chips									
55	Black silt and clay, trace fine sand, no odor									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE C=CORE
PROPORTIONS: TRACE=1-10% LITTLE=10-20% SOME=20-35% AND=35-50%

BORING CONTRACTOR: Stantec

DRILLER: Strata

SOILS ENGINEER:

BORING REPORT

40th Avenue Restoration to Remediation Project

SHEET 22 OF 27
PROJECT NO.: 193702726
HOLE NO.: 1033
SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 259cm
START DATE: 9-18-14/ 8:20
FINISH DATE: 9-18-14 / 8:35

LOCATION: Duluth, MN

OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE	SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.				BORING O.D.: 620' amsl
DATUM	SIZE O.D.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.				NORTH COORD. 417640
	HAMMER FALL				EAST COORD. 2862891

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	light brown silt, satuared, no odor									0-1cm - light brown silt, saturated, no odor
1	Gray silt, trace clay, satuared, no odor									1cm - gray silt, trace clay, saturated, no odor 35cm- gray silt, more clay, trace peat, no odor 50cm- black silt and clay, saturated, no odor Time Sample ID: 08:40 SS 1033 - CH (15cm) 08:45 SS 1033 - CH (50cm) 08:50 SS 1033 - CH (100cm) 08:55 SS 1033 - CH AT (15cm) 08:55 SS 1033 - CH BCA (15cm)
35	Black silt and clay, satuared, no odor									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE C=CORE
PROPORTIONS: TRACE=1-10% LITTLE=10-20% SOME=20-35% AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 23 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1034
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 549cm
SOILS ENGINEER:		START DATE: 9-18-14 / 09:10
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-18-14 / 09:20
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	DRILL RIG: Diedrich 25
AT AFTER HRS.	TYPE		SPLIT SPOON			BORING TYPE: Direct Push
AT AFTER HRS.	SIZE I.D.					BORING O.D.: 624' amsl
DATUM	SIZE O.D.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
TIME	HAMMER WT.					NORTH COORD. 417452
	HAMMER FALL					EAST COORD. 2863072

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown silt, satuared									0cm - brown silt, saturated 15cm - brown, clayey silt, saturated, some wood 50cm - brown clayey silt 95cm - black organic peat, trace sand 100 cm - end of boring
15	Brown, clayey silt, saturated, some wood									Time Sample ID: 09:25 SS 1034 - CH (15cm) 09:30 SS 1034 - CH (50cm) 09:35 SS 1034 - CH (100cm) 09:40 SS 1034 - CH AT (15cm) 09:40 SS 1034 - CH BCA (15cm)
50	Brown clayey silt									
95	Black organic peat, trace sand									
100	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 24 OF 27
DRILLER: Strata		PROJECT NO.: 193702726
		HOLE NO.: 1035
SOILS ENGINEER:		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
		START DATE: 10-1-14 / 09:05
	40th Avenue Restoration to Remediation Project	FINISH DATE: 10-1-14 / 09:15
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS			SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE		SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.					BORING TYPE: Direct Push
DATUM	SIZE O.D.					BORING O.D.: 628' amsl
TIME	HAMMER WT.					BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL					NORTH COORD. 419474
						EAST COORD. 2864838

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown fine silt, dry									0cm - Brown fine silt, dry 36cm - brown / red clay, firm, high plasticity 42cm - light brown silt, trace clay 56cm- darker brown 88cm - light brown clay, firm, high plasticity 100cm - end of boring
36	Brown / red clay, firm, high plasticity									Time Sample ID: 9:20 9:25 9:30
42	Light brown silt, trace clay									
56	darker brown									
88	Light brown clay, firm, high plasticity									
100	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE C=CORE

PROPORTIONS: TRACE=1-10% LITTLE=10-20% SOME=20-35% AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 25 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1037
		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 10-1-14 / 07:35
		FINISH DATE: 10-1-14 / 07:45
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: ---' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. ---
					EAST COORD. ---

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Large gravel (1") brown silt, dry, no odor									0cm - large gravel (1") brown silt, dry, no odor
										42cm - grey gravel
										46cm - large gravel, brown silt, dry
										63cm - black silt, peat, wood fibers,
										100cm - end of boring
										Time Sample ID:
										07:50 SS 1037 - CH (15cm)
										07:55 SS 1037 - CH (50cm)
										08:00 SS 1037 - CH (100cm)
42	Grey gravel									DUP - 03 - CH collected from 100cm interval
46	Large gravel, brown silt, dry									
63	Black silt, peat, wood fibers, dry									
100	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 26 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1041
		SURFACE ELEV.: 40cm DEPTH TO BOTTOM: 192cm
SOILS ENGINEER:	40th Avenue Restoration to Remediation Project	START DATE: 9-18-14 / 08:10
		FINISH DATE: 9-18-14 / 08:20
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 620' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 418266
					EAST COORD.2865840

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Fine - medium brown sand, satuared									0cm - fine-med brown sand, saturated 15cm - brown med-fine sand, 35cm - SAA, iron pellets 40cm - brown med-fine sand 48cm - wood 50cm- refusal Time Sample ID: 08:25 SS 1041 - CH (15cm) 08:30 SS 1041 - CH (50cm) 08:40 SS 1041 - CH AT (15cm) 08:40 SS 1041 - CH BCA (15cm)
15	Brown, medium-fine sand, satuared									
35	SAA, Iron pellets									
40	Brown medium-fine sand									
48	wood									
50	End									

NOTES:

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

BORING CONTRACTOR: Stantec	**BORING REPORT**	SHEET 27 OF 27
		PROJECT NO.: 193702726
DRILLER: Strata		HOLE NO.: 1042
		SURFACE ELEV.: -- DEPTH TO BOTTOM: --
SOILS ENGINEER:		START DATE: 9-17-14/ 09:10
	40th Avenue Restoration to Remediation Project	FINISH DATE: 9-17-14 / 09:20
LOCATION: Duluth, MN		OFFSET:

GROUND WATER OBSERVATIONS		SAMPLER	AUGER	CORE BARREL	
AT AFTER HRS.	TYPE	SPLIT SPOON			DRILL RIG: Diedrich 25
AT AFTER HRS.	SIZE I.D.				BORING TYPE: Direct Push
DATUM	SIZE O.D.				BORING O.D.: 623' amsl
TIME	HAMMER WT.				BOREHOLE DEPTH: 50 cm BOREHOLE DIA.:
	HAMMER FALL				NORTH COORD. 417106
					EAST COORD. 2862169

DEPTH	SEDIMENT CHARACTERISTICS	SAMPLE DEPTHS FROM - TO (FEET)	TYPE AND NO.	PEN. INCH	REC. INCH	6 INCHES ON SAMPLER	N	USCS CLASS.	STRAT. CHNG. DEPTH	FIELD IDENTIFICATION OF SOILS
0	Brown / gray silty sand, satuared, trace cobbles									0cm - Brown /gray silty sand, saturated, trace cobbles 15cm- brown sand, saturated 50cm - end of boring
15	Brown sand, satuared									Time Sample ID: 09:25 SS 1042 - CH (15cm) 09:30 SS 1042 - CH (50cm) 09:30 SS 1042 - CH MS (50cm) 09:30 SS 1042 - CH MSD (50cm) 09:40 SS 1042 AT (15cm) 09:40 SS 1042 BCA (15cm)
50	End									

NOTES:

The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against Stantec if he finds that the actual conditions do not conform to those indicated by this log.

Soil description represents a field identification after D.M. Burmister unless otherwise noted.

SAMPLE TYPE:	S= SPLIT SPOON	U=SHELBY TUBE	C=CORE	
PROPORTIONS:	TRACE=1-10%	LITTLE=10-20%	SOME=20-35%	AND=35-50%

APPENDIX C:

TOXICITY TESTING AND MACROINVERTEBRATE REPORTS

Great Lakes Environmental Center, Inc.

Applied Environmental Sciences
www.glec.com

Traverse City
739 Hastings St.
Traverse City
MI 49686

231 941-2230
231 941-2240 fax

Columbus
1295 King Ave.
Columbus
OH 43212

614 487-1040
614 487-1920 fax

February 17, 2015

David Constant, P.G.
Stantec
6188 Rome Circle NW
Rochester, MN 55901

Edward G. Lilla, PE, LEEDAP
Jewell Associates Engineers, Inc.
560 Sunrise Drive
Spring Green, WI 53588

RE: **FINAL REPORT: Results for the 10-day *Chironomus dilutus*, 28-day *Hyalella azteca,* and 28-day *Lumbriculus variegatus* Whole Sediment Toxicity Testing and Macroinvertebrate Taxonomy Results**
Stantec; St. Louis River 40th Avenue Project
Project Number: 2290

Dear Mr. Constant:

Great Lakes Environmental Center, Inc. (GLEC) has completed our analysis of twenty-one sediment samples that were collected by Stantec personnel on September 15th, 16th, 17th, 18th, and 19th, 2014 for the St. Louis River 40th Avenue Project in Duluth, Minnesota. Our analysis included macroinvertebrate taxonomy and the following whole sediment toxicity tests: *Chironomus dilutus* (*C. dilutus)* 10-day growth and survival, *Hyalella azteca* (*H. azteca*) 28-day growth and survival, and *Lumbriculus variegatus* (*L. variegatus)* 28-day bioaccumulation tests which included the 4-day acute toxicity screening tests.

During the whole sediment toxicity tests with *C. dilutus* and *H. azteca*, the organisms were exposed to whole sediment sample and the effects on survival and growth were measured. The *L. variegatus* 28-day bioaccumulation analysis included the exposure of *L. variegatus* to whole sediment samples and the measurement of lipid, percent moisture, metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenol arochlors (PCB Arochlors) and Dioxin Furan compounds in tissue samples. Total organic Carbon, percent moisture, and grain size was also analyzed in the whole sediment samples (Appendix I).

The macroinvertebrate taxonomy consisted of the sorting and identification of macroinvertebrates from surface grab sediment samples and the calculation of common metrics. The macroinvertebtrate analysis and the whole sediment toxicity tests were completed at GLEC's laboratory in Traverse City, Michigan. Sediment and tissue chemistry analysis was completed by Pace Analytical Laboratories in Green Bay, Wisconsin.

Whole Sediment Toxicity

The sample identification numbers, survival, and growth test results for the whole sediment toxicity assessments for the twenty-one sediment samples and laboratory controls are summarized and provided in the following tables:

- Table 1: 10-Day *C. dilutus* Average Percent Survival
- Table 2: 10-Day *C. dilutus* Average Growth and Biomass Estimates (expressed as average ash-free-dry-weight (AFDW))
- Table 3: 28-Day *H. azteca* Average Percent Survival
- Table 4: 28-Day *H. azteca* Average Growth and Biomass Estimates
- Table 5: 4-Day *L. variegatus* Average Percent Survival
- Tables 6a, 6b, and 6c: 28-Day *L. variegatus* Average Depurated Wet Weight
- Table 7: 28-Day *L. variegatus* Tissue Analyte Results: Percent Lipids, Percent Moisture, and PAHs
- Table 8: 28-Day *L. variegatus* Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture, and PCB Arochlors
- Table 9: 28-Day *L. variegatus* Tissue Analyte Results: Dioxin and Furan

Water quality data for the overlying water for each sediment sample tested are summarized in Tables 10 through 15 for the *C. dilutus*, *H. azteca*, 4-day *L. variegatus,* and 28-day *L. variegatus* tests, respectively. Summaries of the statistically significant differences (p=0.05) between each of the two reference sediment samples; SS-1031-AT (GLC Number 10,222) and SS-1041-AT (GLC Number 10,254) and the nineteen site investigative sediment samples are provided in Table 16 for the *C. dilutus* tests and in Table 17 for the *H. azteca* tests.

Sediment percent moisture, Total Organic Carbon (TOC), and grain size results of the twenty-one sediment samples are provided in Table 18.

A detailed summary of the overlying water quality measurements are provided in Appendices B1 (*C. dilutus*), B2 (*H. azteca*), B3 (4- day *L. variegatus)*, B4 (28-day *L. variegatus* conducted October 8-November 5, 2014*)*, B5 (28-day *L. variegatus* conducted October 22-November 19, 2014*)*, and B6 (28-day *L. variegatus* conducted November 12-December 10, 2014*)*.

The survival, growth, and statistical data sheets and summaries for the *C. dilutus* and *H. azteca* tests are shown in Appendices C1 through C3, and D1 through D3, respectively. The laboratory data sheets and statistical data sheets for the 4-day percent survival are provided in

Appendix E and 28-day depurated wet weights of the *L. variegatus* are provided in Appendices F1 through F3.

The analytical chemistry data for the 28-day *L. variegatus* whole sediment bioaccumulation tests are provided on the enclosed compact diskettes and summarized in Tables 7a through 7c, 8a through 8c, and 9a through 9c (Appendix F4).

The daily laboratory bench data sheets are kept on file at GLEC and are also provided on the enclosed compact diskettes. Chain of Custody forms and reference toxicant data are provided in Appendices A and G, respectively.

Macroinvertebrate Taxonomy

Macroinvertebrate Indices results for the twenty-one macroinvertebrate samples are shown in Table 19. Chain of Custody forms and sample identification numbers for the macroinvertebrate samples are provided in Appendix H.

METHODS

The whole sediment toxicity tests were conducted at our Traverse City, Michigan laboratory following GLEC's written Standard Operating Procedures (SOPs) which are based on the procedures outlined in U.S. EPA Method, EPA/600/R-99/064 *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates*, Second Edition and American Society for Testing and Materials (ASTM) 1706-05, *Standard Test Methods for Measuring the Toxicity of Sediment Associated Contaminants with Freshwater Invertebrates* (ASTM 2010).

The twenty-one sediment samples were collected by Stantec and delivered via courier to GLEC. The sediment samples were received at GLEC, where they were assigned a unique GLEC laboratory identification number and stored at 0≤6°C, but not frozen, until test initiation (see table below).

Sample I.D.	Sample Description	GLEC Lab. ID Number	Date Sampled	Date Received
SS-1031-AT	Reference Sample	10,222	September 18, 2014	September 19, 2014
SS-1041-AT	Reference Sample	10,254	September 19, 2014	September 23, 2014
SS-1022-AT	Site Sample	10,207	September 16, 2014	September 17, 2014
SS-1024-AT	Site Sample	10,208	September 16, 2014	September 17, 2014
SS-1032-AT	Site Sample	10,209	September 15, 2014	September 17, 2014
SS-1021-AT	Site Sample	10,210	September 15, 2014	September 17, 2014

Sample I.D.	Sample Description	GLEC Lab. ID Number	Date Sampled	Date Received
SS-1026-AT	Site Sample	10,212	September 16, 2014	September 18, 2014
SS-1028-AT	Site Sample	10,213	September 16, 2014	September 18, 2014
SS-1025-AT	Site Sample	10,214	September 16, 2014	September 18, 2014
SS-1010-AT	Site Sample	10,215	September 17, 2014	September 18, 2014
SS-1029-AT	Site Sample	10,216	September 17, 2014	September 18, 2014
SS-1001-AT	Site Sample	10,217	September 17, 2014	September 18, 2014
SS-1042-AT	Site Sample	10,218	September 17, 2014	September 18, 2014
SS-1009-AT	Site Sample	10,219	September 18, 2014	September 19, 2014
SS-1017-AT	Site Sample	10,220	September 18, 2014	September 19, 2014
SS-1011-AT	Site Sample	10,221	September 18, 2014	September 19, 2014
SS-1033-AT	Site Sample	10,223	September 18, 2014	September 19, 2014
SS-1034-AT	Site Sample	10,224	September 18, 2014	September 19, 2014
SS-1002-AT	Site Sample	10,225	September 18, 2014	September 19, 2014
SS-1005-AT	Site Sample	10,226	September 18, 2014	September 19, 2014
SS-1012-AT	Site Sample	10,256	September 19, 2014	September 23, 2014

The 10-day *C. dilutus* toxicity tests and the 28-day *H. azteca* toxicity tests were initiated on November 04, 2014 for each of the twenty-one sediment samples, one GLEC laboratory control sediment and one water only exposure, per test organism.

On October 03, 2014, the twenty-one investigative sediment samples and a laboratory control sediment were used to initiate 4-day *L. variegatus* sediment toxicity screening tests. There was no statistically significant reduction ($p \geq 0.05$) in *L. variegatus* survival after 4-days of exposure in the twenty-one investigative samples when compared to the laboratory control sediment (Table 5). Consequently, the 28-day *L. variegatus* bioaccumulation tests were initiated with the twenty-one investigative sediments and one laboratory control sediment. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were initiated on three different days; October 08, October 22, and November 12, 2014.

10-DAY *CHIRONOMUS DILUTUS* AND 28-DAY *HYALELLA AZTECA* WHOLE SEDIMENT TOXICITY TESTS

Summary of Test Procedures: 10-Day *Chironomus dilutus* and 28-Day *Hyalella azteca*

Second to third instar *C. dilutus* (10-11 days old at test initiation; provided by an outside supplier: Aquatic Bio Systems) was used to initiate the 10-day whole sediment toxicity tests and water only exposures. Juvenile *H. azteca* (7-8 days old; cultured in house) were used to

initiate the 28-day whole sediment toxicity tests and water only exposure. All organisms were randomly placed in test chambers using a large bore pipette. The *C. dilutus* and *H. azteca* were continuously exposed for the duration of the test (10-day and 28-day, respectively) to each of the sediment samples, one laboratory control sediment and one water only exposure.

In the water only exposures, test organisms were exposed to the overlying water with no sediment. There were eight replicate beakers for each sediment sample, the water only exposure, and the GLEC laboratory control sediment; each replicate contained 10 test organisms. The GLEC laboratory control sediment is a reference sediment that is collected from the Boardman River, a local river that has a primarily forested watershed in the Pere Marquette State Forest.

The *C. dilutus* and *H. azteca* were exposed in 470 mL glass test chambers, each containing 100 mL of whole sediment and 175 mL of overlying water.

Prior to adding the whole sediment to each test chamber, the laboratory control sediment as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all purpose mixer or spoon until a uniform color and texture was achieved.

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was immediately added; and was considered to be test day -1, the test day prior to day 0 (November 03, 2014 for the *C. dilutus* tests and for the *H. azteca* tests). Test organisms were randomly added to each replicate test chamber the following day (test day 0), November 04, 2014.

Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample, the laboratory control sediment, and the water only exposure consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 mg/L and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use.

The *C. dilutus* test chambers were fed 1.5 mL of Tetrafin® goldfish food slurry (4 mg/mL dry solids) once daily. The *H. azteca* test chambers were fed 1.0 mL mixture of yeast, trout food, and cerophyl (YTC; ~1800 (1700-1900 +/- 5%) mg/L solids) once daily.

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and the dissolved oxygen (DO) concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets.

If the DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO increased to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended unless the DO values dropped back below 2.5 mg/L, at which time the additional water renewals were re-initiated. There were no instances in the whole sediment toxicity tests of decreased DO and increased overlying water renewals.

Alkalinity, hardness, pH, conductance, and total ammonia (as N) were measured in the overlying water on test days 0 and 10 the *C. dilutus* (Table 10 and Appendix B1) and on days 0 and 28 for the *H. azteca* tests (Table 11 and Appendix B2) tests. For the 28-day *H. azteca* whole sediment toxicity tests, conductivity was measured weekly, and pH was measured at least three times per week from two randomly selected test chambers. The alkalinity, hardness, and total ammonia (as N) samples were a composite sample collected from all replicates of a given treatment. All test exposure water quality measurements were recorded on the laboratory bench data sheets (see enclosed compact disc).

Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber and recorded on the laboratory bench data sheets.

The number of *C. dilutus* surviving in each replicate test chamber was recorded at test termination (10 days), and a summary of the percent survival at test termination is provided in Tables 1 and 2. The average ash free dry weight [AFDW in milligrams (mg)] of the surviving organisms for each *C. dilutus* replicate, and the biomass [AFDW (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination, and the results are summarized in Table 2.

The number of surviving *H. azteca* in each replicate chamber was recorded at test termination (28 days) and the survival data are summarized in Tables 3 and 4. The average dry weight [in milligrams (mg)] of the surviving organisms for each *H. azteca* replicate, and the biomass [dry weight (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination, and the data are summarized in Table 4.

A statistical procedure, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in U.S. EPA Method 600/R-99/064 and ASTM Method 1706-95B (2000), was used to compare the 10-day *C. dilutus* and the 28-Day *H. azteca* survival and growth data from the nineteen site investigative sediment samples to survival and growth data from two reference site sediment samples. Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then

tested using either the homoscedastic or heteroscedastic t-tests, which are used for comparing a single treatment to a single control.

The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Growth data were initially evaluated for normal distribution and homogeneity of variances. In those cases where the data were not normally distributed or homogenous, the data were analyzed using either the heteroscedastic t-test or the nonparametric test. In addition to growth being evaluated as average dry weight of the surviving organisms, growth was also analyzed as biomass (average dry weight of surviving organisms divided by the number of initial organisms).

The survival and growth for each investigative sample was considered statistically different when significantly lower ($p < 0.05$) than observed in the reference sediment.

C. dilutus (survival and growth endpoints) and *H. azteca* (survival endpoint) were compared statistically to the following two reference sites:

1. Site Reference Sample: SS-1031-AT (GLC Number 10,222); and

2. Site Reference Sample: SS-1041-AT (GLC Number 10,254).

Organisms exposed to the GLEC laboratory control sediment and the "water only" exposure achieved acceptable survival and growth, as specified in the U.S. EPA /600/R-99/064. In this instance, GLEC's laboratory control sediment and water only exposure results were used to confirm test acceptability and the health of the test organisms.

RESULTS

10-Day *Chironomus dilutus* and 28-Day *Hyalella azteca* Whole Sediment Toxicity Tests

10-Day *Chironomus dilutus*

The organisms exposed to the laboratory control sediment and to the water only exposure exceeded the minimum survival (70 percent) and growth (0.48 mg AFDW at test termination) criteria for acceptable controls for the *C. dilutus* tests (Tables 1 and 2). The acceptability requirements for survival and growth for the *C. dilutus* test can be found in U.S. EPA Method 600/R-99/064, Table 12.1. There was 100 percent survival in the laboratory control.

The overlying water quality measurements (Table 10) were also within the acceptable limits following the U.S. EPA testing protocol. Daily mean temperatures were 23°C ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water; and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of ten days varied between 0.10 mg/L and 2.68 mg/L in the overlying water among all sediment types. Consequently, the *C. dilutus* whole sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment toxicity.

All test chambers were observed daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples.

Statistical Analysis for 10-Day *Chironomus dilutus* Tests

Site Reference Sample SS-1031-AT Compared to Investigative Sediment Samples

C. dilutus survival and growth results (Appendix C1) from the site reference sample SS-1031-AT (GLC Number: 10,222) were compared statistically to the nineteen investigative sediment samples. After 10 days of exposure when compared to the sediment sample SS-1031-AT, *C. dilutus* survival was significantly reduced ($p<0.05$) in two investigative sediment samples; SS-1001-AT and SS-1005-AT (see Tables 1, 2, and 16, and Appendix C2).

When compared to the site reference sample SS-1031-AT (see Tables 2 and 16 and Appendix C2), *C. dilutus* growth measured as AFDW of surviving organisms (mg) was significantly; significantly reduced ($p< 0.05$) in two sediment samples;

- SS-1022-AT (GLC Number: 10,207); and
- SS-1032-AT (GLC Number: 10,209).

Additionally, when the investigative sediment samples were compared to the site reference sample SS-1031-AT (see Tables 2 and 16 and Appendix C2), *C. dilutus* growth expressed as biomass [AFDW of surviving organisms divided by the initial number of organisms (mg)] was significantly reduced ($p<0.05$) in three of the investigative site sediment samples, including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1032-AT (GLC Number: 10,209); and
- SS-1005-AT (GLC Number: 10,226).

Site Reference Sample SS-1041-AT Compared to Investigative Sediment Samples

C. dilutus survival and growth results (Appendix C1) from the site reference sample SS-1041-AT (GLC Number: 10,254) were compared statistically to the nineteen investigative sediment samples. After 10 days of exposure when compared to the sediment sample SS-1041-AT, *C. dilutus* survival was significantly reduced ($p<0.05$) in nine investigative sediment samples; including (see Tables 1, 2, and 16 and Appendix C3):

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1011-AT (GLC Number: 10,221);
- SS-1034-AT (GLC Number: 10,224);
- SS-1002-AT (GLC Number: 10,225);
- SS-1005-AT (GLC Number: 10,226) ; and
- SS-1012-AT (GLC Number: 10,256).

Growth measured as AFDW of surviving organisms (mg) was not significantly ($p\geq 0.05$) reduced in any of nineteen investigative site sediment samples after 10 days of exposure when compared to the site reference sediment SS-1041-AT (see Tables 2 and 16, and Appendix C3).

C. dilutus growth expressed as biomass was significantly reduced ($p<0.05$) in the investigative site sediment sample; SS 1022-AT (GLC Number: 10,207) after 10 days of exposure when compared to the site reference sediment SS-1041-AT (see Tables 2 and 16, and Appendix C3)

Outputs for the survival and growth statistical analyses for the *C. dilutus* whole sediment toxicity tests are provided in Appendices C1, C2, and C3.

28-Day *Hyalella Azteca*

The *H. azteca* test organisms exposed to the GLEC laboratory control sediment and to the water only exposure exceeded the minimum survival criteria (80%), and displayed acceptable measurable growth (Tables 3 and 4). The requirements for acceptable survival and growth for the *H. azteca* can be found in U.S. EPA /600/R-99/064, Table 14.3. There was 98.8 percent survival in the laboratory control.

The overlying water quality measurements (Table 11) were also within the acceptable limits following the U.S. EPA testing protocol. Daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water, and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of twenty-eight days varied between 0.06 mg/L and 2.68 mg/L in the overlying water among all sediment types.

All test chambers were checked daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples. The *H. azteca* whole sediment toxicity tests are valid assessments of sediment toxicity.

Statistical Analysis for 28-Day *Hyalella azteca* Tests

Site Reference Sample SS-1031-AT Compared to Investigative Sediment Samples

Survival and growth results (Appendix D1) from the site reference sediment sample SS-1031-AT (GLC Number: 10,222) were compared statistically to the nineteen investigative sediment samples. After 28 days of exposure when compared to reference sediment sample SS-1031-AT (see Tables 3, 4, and 17 and Appendix D2) *H. azteca* survival was significantly reduced ($p < 0.05$) in one sediment sample SS-1042-AT (GLC Number: 10,218).

After 28 days of exposure there was statistical significant reductions ($p < 0.05$) in the following four investigative site sediment samples for *H. azteca* growth (expressed as average dry weight) of the surviving organisms and as biomass when compared to site reference sediment sample SS-1031-AT (see Table 4 and Appendices D1):

- SS-1022-AT (GLC Number: 10,207);
- SS-1021-AT (GLC Number: 10,210);
- SS-1010-AT (GLC Number: 10,215); and
- SS-1012-AT (GLC Number: 10,256).

Site Reference Sample SS-1041-AT Compared to Investigative Sediment Samples

Survival and growth results (Appendix D1) from the reference sediment sample SS-1041-AT (GLC Number: 10, 254) were compared statistically to the nineteen investigative site sediment samples. When compared to the SS-1041-AT reference sediment sample (see Tables 3, 4, and 17 and Appendix D3), *H. azteca* survival was significantly reduced ($p < 0.05$) in three sediment samples;

- SS-1028-AT (GLC Number: 10,213);
- SS-1042-AT (GLC Number: 10,218); and
- SS-1011-AT (GLC Number: 10,221).

When compared to the reference sediment sample SS-1041-AT (see Tables 4, and 17 and Appendix D3), *H. azteca* growth (expressed as average dry weight) of the surviving organisms was significantly reduced ($p < 0.05$) in ten investigative sediment samples, including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1032-AT (GLC Number: 10,209);
- SS-1021-AT (GLC Number: 10,210);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1017-AT (GLC Number: 10,220);
- SS-1011-AT (GLC Number: 10,221);
- SS-1005-AT (GLC Number: 10,226); and
- SS-1012-AT (GLC Number: 10,256).

H. azteca growth (measured as biomass) when compared to the reference sediment sample SS-1041-AT (see Tables 4 and 17 and Appendix D3), was significantly reduced ($p<0.05$) in twelve investigative site sediment samples including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1032-AT (GLC Number: 10,209);
- SS-1021-AT (GLC Number: 10,210);
- SS-1025-AT (GLC Number: 10,214);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1009-AT (GLC Number: 10,219);
- SS-1017-AT (GLC Number: 10,220);

- SS-1011-AT (GLC Number: 10,221);
- SS-1005-AT (GLC Number: 10,226); and
- SS-1012-AT (GLC Number: 10,256).

Outputs for the survival and growth statistical analyses for the *H. azteca* whole sediment toxicity tests are provided in Appendices D1, D2, and D3.

28-DAY *LUMBRICULUS VARIEGATUS* *WHOLE SEDIMENT BIOACCUMULATION TOXICITY TEST*

Summary of Test Procedures: 4-day *Lumbriculus variegatus* Acute Whole Sediment Toxicity Screening Test

Prior to conducting the 28-day bioaccumulation studies, 4-day *L. variegatus* acute toxicity screening tests were conducted. The 4-day *L. variegatus* acute toxicity screening tests were initiated with each of the twenty-one investigative sediment samples (as listed in the previous table) and one laboratory control sediment, on October 03, 2014.

Adult *L. variegatus* (purchased from California Blackworm Company) were used to initiate the 4-day whole sediment toxicity screening tests. *L. variegatus* were continuously exposed for 4-days to each of the twenty-one investigative sediment samples and to the laboratory control sediment.

Consistent with the EPA method, there were four replicate samples for each investigative sediment sample and the laboratory control sample; each *L. variegatus* replicate was initiated with 10 animals.

The *L. variegatus* were exposed in 470 mL glass test chambers, each containing 100 mL of whole sediment and 175 mL of overlying water.

Prior to adding the whole sediment to each test chamber, the laboratory control as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all purpose mixer or spoon until a uniform color and texture was achieved.

A subsample of the homogenized twenty-one investigative sediment samples was collected and shipped to Pace Analytical to be analyzed for the following characteristics; Percent Moisture, Total Organic Carbon (TOC), and grain size (see Table 18).

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was

immediately added; this was considered to be test day -1 (October 02, 2014). Test organisms were randomly added to each replicate test chamber the following day (test day 0).

Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample and the laboratory control sediment consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 mg/L and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use.

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and the dissolved oxygen (DO) concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets. If the DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO recovered to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended, until the DO values dropped below 2.5 mg/L, at which time the additional water renewals were re-initiated.

Alkalinity, hardness, pH, conductivity, and total ammonia (as N) were measured on test days 0 and 4, in the overlying water for the *L. variegatus* tests (Table 12 and Appendix B3).

Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber and recorded on the laboratory bench data sheets.

The number of *L. variegatus* surviving in each replicate test chamber was recorded at test termination (4 days), and a summary of the percent survival at test termination is provided in Table 5.

A statistical analysis, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in EPA Method 600/R-99/064 and ASTM (2000) Method 1706-95B, was used to compare the 4-day survival of the laboratory control to the investigative sediment samples. In this instance, the laboratory control was used for comparison with each of the twenty-one investigative sediments. Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then tested using either the homoscedastic or heteroscedastic t-test, which are used for comparing a single treatment to a single control. The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data

are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Results: 4-Day *L. variegatus* Acute Whole Sediment Toxicity Screening Test

The organisms exposed to each laboratory control sediment exceeded 90 percent survival after 4-days of exposure.

GLEC laboratory controls for each toxicity test met the minimum survival requirements as specified in the EPA method and those requirements are acknowledged in the following results section for each set of toxicity tests. For the purpose of this study, the laboratory control sediment was used as a measure of test acceptably and the health of the test organisms.

The overlying water quality measurements (Table 12 and Appendix B3) were also within the acceptable limits following the U.S. EPA testing protocol (i.e., daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of 4 days varied between 0.07 mg/L and 2.40 mg/L in the overlying water among all sediment types). Consequently, the *L. variegatus* 4-day whole sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment screening toxicity.

All test chambers were observed daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples.

4-Day *L. variegatus* Statistical Results

L. variegatus 4-day survival results from the laboratory control sediment conducted October 03 through 07, 2014 were compared statistically to the twenty-one investigative sediment samples. *L. variegatus* survival was not significantly reduced ($p \geq 0.05$) in any of the twenty-one investigative sediment samples after 4-days of exposure when compared to the laboratory control sediment (see Table 5).

Outputs for the survival statistical analyses for the *L. variegatus* 4-day survival whole sediment toxicity tests are provided in Appendix E.

Summary of Test Procedures: 28-Day *L. variegatus* Whole Sediment Bioaccumulation Tests

Adult *L. variegatus* were continuously exposed for 28-days to the twenty-one investigative sediment samples. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were initiated on three different

days. On October 08, 2014 the following seven sediment samples and one laboratory control were initiated; SS-1022-AT, SS-1024AT, SS-1032-AT, SS-1021-AT, SS-1026-AT, SS-1028-AT, and SS-1025-AT. The second set of seven sediment samples; SS-1010-AT, SS-1029-AT, SS-1001-AT, SS-1042-AT, SS-1009-AT, SS-1017-AT, and SS-1011-AT, were initiated on October 22, 2014 with one laboratory control sediment. The remaining seven sediment samples were initiated on November 12, 2014 with one laboratory control sediment and the following sediment samples; SS-1031-AT, SS-1033-AT, SS-1034-AT, SS-1002-AT, SS-1005-AT, SS-1041-AT, and SS-1012-AT.

Adult *L. variegatus* were exposed in 3 liter (L) glass tanks, each containing 1L of whole sediment and 2 L of overlying water. Temperature-controlled overlying water was supplied to each test chamber via a continuous-renewal water delivery system at a rate of 5 mL/min (± 2 mL/min). All test chambers were aerated at approximately 100 bubbles per minute for the full duration of the test. The overlying water consisted of de-chlorinated municipal (Lake Michigan) water of moderate hardness (~140 mg/L). Consistent with the test procedure, there were five replicate tanks for each sediment sample, each initiated with 30 g of *L. variegatus* (as per study plan).

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod of 16 hours light and 8 hours dark; and ambient lighting. Water temperature and dissolved oxygen were monitored daily in two random replicates for each test sample. Alkalinity, hardness, pH, dissolved oxygen (D.O.), conductivity, temperature, and total ammonia were measured at Day 0 (test initiation) and on days 7, 14, 21, and 27 (Tables 13, 14, 15, and Appendix B4 through B6).

All test chambers were checked daily to assess organism behavior and no unusual observations were noted with the test organisms. Consequently, the *L. variegatus* whole sediment toxicity tests are valid assessments of sediment toxicity.

The overlying water quality measurements (Tables 13, 14, and 15) were also within the acceptable limits following the U.S. EPA testing protocol (i.e., daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of 28 days varied between 0.03 mg/L and 1.72 mg/L in the overlying water among all sediment types.). Consequently, the *L. variegatus* 28-day bioaccumulation sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment toxicity.

At test termination, the test organisms were recovered from each replicate chamber using reasonable effort until a minimum of 15 grams of *L. variegatus* per replicate or 70 grams of *L. variegatus* composited per sediment sample (requested per client) was recovered. The final total depurated wet weight (g) of surviving *L. variegatus* was also determined at test termination and is provided in Tables 6a, 6b, and 6c and Appendices F1 through F3.

After 28-29 days of exposure, the surviving *L. variegatus* were depurated for 24 hours in overlying water to purge all gut contents. Due to the quantity and physical characteristics of the sediment samples an inordinate amount of time was necessary to remove the organisms, Therefore, test termination for all twenty-one sediments ranged between 28 and 29 days.

After the 24-hour depuration period, the surviving *L. variegatus* were weighed, then frozen in glass jars (supplied by the analytical laboratory) and shipped to Pace Analytical for tissue analysis on the following analytes: percent lipids, percent moisture, PAHs, metals, PCB Archlors, and Dioxin/Furan (Tables 7, 8, and 9).

The analyte result data supplied by Pace Analytical is provided in Appendix F4 and electronically on the enclosed compact diskette.

Results: 28-Day *L. variegatus* Tissue Analysis

L. variegatus tissue that was harvested from the 28-day bioaccumulation toxicity tests were analyzed by Pace Laboratories, Inc. for the following parameters:

- **Percent Moisture:** Analytical Method; ASTM D2974-87
- **Polychlorinated Biphenyls (PCB Arochlors); EPA 8082A,** Analytical Method; 8082A GCS
  - PCB-1016 (Aroclor 1016)
  - PCB-1221 (Aroclor 1221)
  - PCB-1232 (Aroclor 1232)
  - PCB-1242 (Aroclor 1242)
  - PCB-1248 (Aroclor 1248)
  - PCB-1254 (Aroclor 1254)
  - PCB-1260 (Aroclor 1260)
  - PCB, Total
- **Metals, EPA 6020** (6020 MET ICPMS)
  - Arsenic
  - Barium
  - Cadmium
  - Chromium
  - Copper
  - Lead
  - Mercury
  - Nickel
- **Polyaromatic Hydrocarbons (EPA 8270 by SIM)**
  - 1-Methylnaphthalene
  - 2-Methylnaphthalene

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

- **Lipid** (Pace Laboratory Method)

All analyses are reported on a wet weight basis. Quality Control data and reporting are provided with the raw analytical data in the attached diskette. No statistical analysis were performed with the *L. variegates* tissue analysis.

Total Organic Carbon, percent moisture and grain size were also analyzed in whole sediment samples (Table 18). Percent Sand, Silt, Clay was analyzed using Method ASA 15-5 (modified). Total organic Carbon in both tissue and sediment were analyzed using the Walkey Black Method.

MACROINVERTEBRATE TAXONOMY

GLEC completed macroinvertebrate taxonomy and analysis of twenty-one samples (Table 19). The macroinvertebrate samples were analyzed following the taxonomy protocols outlined in: *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish* - Second Edition; EPA 841-B-99-002 (Level 3 taxonomy).

A subsample of approximately 300 organisms were randomly sorted from each sample and identified to the lowest practical taxon (genus, species). If fewer than 300 organisms were present, the entire sample was sorted and counted. A standard suite of metrics were calculated from the macroinvertebrate dataset and results are provided Table 19. No statistical analysis was performed with the invertebrate data. The entire macroinvertebrate dataset and sample chain of custodies are provided in Appendix H.

SUMMARY

In summary, GLEC completed whole sediment toxicity testing and analysis of twenty-one sediment samples. Each whole sediment toxicity test was performed following acceptable methods, without exception, and is accurate and complete. Whole sediment toxicity test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC).

Statistical analyses were completed for the whole sediment toxicity tests with *C. dilutus* and *H. azteca*. All data are summarized in the following tables and raw data reported in the appendices to this report.

C. dilutus survival was significantly reduced in two sediment samples when compared to the reference sediment sample SS-1031-AT (Table 16). Survival, when compared to the reference sediment sample, SS-1041-AT was also significantly reduced in nine investigative site sediment samples (Table 16). *C. dilutus* growth, expressed as average Ash-Free-Dry-Weight or biomass was significantly reduced in two and three of investigative site sediment samples, when compared to reference sediment samples; SS-1031-AT and SS-1041-AT, respectively (Table 16).

H. azteca survival was significantly reduced in one of the investigative site sediment samples when compared to reference sediment sample SS-1031-AT (Table 17). Survival was significantly reduced in three investigative sediment samples when compared to the reference sediment sample SS-1041-AT. *H. azteca* growth (expressed either as average dry weight or biomass) was significantly reduced in four sediment samples, when compared to the reference sediment sample SS-1031-ATT (Table 17). However, when *H. azteca* growth was compared to the reference sediment sample SS-1041-AT, twelve investigative site sediment samples showed a significant reduction (Table 17).

No statistical comparisons were completed with the macroinvertebrate data nor the *L. variegatus* analytical tissue data. MacroInvertebrate taxonomy data are summarized in Table 19. *L. variegatus* analytical tissue data are summarized in Tables 7 through 9. Sediment chemistry results for percent moisture, total organic Carbon, and grain size are summarized in Table 18.

If you have any questions, or if you would like additional information, please contact either myself or Dennis McCauley at (231) 941-2230. Thank you for the opportunity to provide this service to Stantec. We look forward to continue providing environmental services to you in the future.

Sincerely,

Mailee W. Garton
Laboratory Coordinator

Dennis J. McCauley
President/Principal Research Scientist

MWG:mg

ACCREDITED IN ACCORDANCE WITH nelac

GLEC

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis Harbor 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**Reference Sediment SS 1031-AT**	**Reference Sediment SS 1041-AT**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**
GLC#	**CS# 124**	**10,222**	**10,254**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**
1	10	10	10	7	9	9	9	10
2	10	10	8	9	9	10	8	9
3	10	10	10	9	9	10	10	10
4	10	7	10	6	7	9	10	10
5	10	8	9	9	10	10	8	10
6	10	10	10	10	9	10	9	10
7	10	9	10	7	8	9	10	10
8	10	10	10	10	9	10	8	10
10-Day Percent Survival	**100.0**	**92.5**	**96.3**	**83.8** [c]	**87.5** [c]	**96.3**	**90.0**	**98.8**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 2 of 3) ***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis Harbor 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1028-AT**	**SS 1025-AT**	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS1017-AT**
GLC#	**10,213**	**10,214**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**
1	10	10	8	10	8	8	7	10
2	10	10	8	9	5	10	9	10
3	9	9	8	10	8	8	6	10
4	8	9	8	10	7	8	10	8
5	9	10	10	9	9	10	10	9
6	8	8	8	10	7	10	7	9
7	10	9	8	10	8	10	10	10
8	10	10	10	9	7	10	10	10
10-Day Percent Survival	**92.5**	**93.8**	**85.0 [c]**	**96.3**	**73.8 [b.c]**	**92.5**	**86.3**	**95.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 3 of 3) ***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]						
Replicate Number	**SS 1011-AT**	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1012-AT**	**Water Only**
GLC#	**10,221**	**10,223**	**10,224**	**10,225**	**10,226**	**10,256**	**Secondary Control**
1	10	10	10	9	8	9	10
2	6	9	8	10	9	7	9
3	9	9	8	10	8	8	8
4	8	10	8	10	7	5	10
5	10	7	9	8	7	9	10
6	9	9	9	7	9	8	10
7	8	9	9	8	7	10	9
8	9	10	10	8	8	10	8
10-Day Percent Survival	**86.3 [c]**	**91.3**	**88.8 [c]**	**87.5 [c]**	**78.8 [b,c]**	**82.5 [c]**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 1 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Control CS# 124		Reference Sediment SS 1031-AT 10,222		Reference Sediment SS 1041-AT 10,254		SS 1022-AT 10,207		SS 1024-AT 10,208		SS 1032-AT 10,209	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.41500	1.41500	1.07700	1.07700	0.72700	0.72700	0.81429	0.57000	0.90778	0.81700	0.76556	0.68900
2	1.42500	1.42500	0.79900	0.79900	0.93500	0.74800	0.87333	0.78600	0.91444	0.82300	0.67500	0.67500
3	1.15900	1.15900	0.92500	0.92500	0.72100	0.72100	0.75222	0.67700	0.96889	0.87200	0.81800	0.81800
4	1.29500	1.29500	1.11571	0.78100	0.77800	0.77800	0.79667	0.47800	1.10286	0.77200	0.86111	0.77500
5	1.38000	1.38000	0.86000	0.68800	0.90333	0.81300	0.86778	0.78100	0.89000	0.89000	0.91400	0.91400
6	1.21600	1.21600	0.89900	0.89900	0.67000	0.67000	0.69700	0.69700	0.83333	0.75000	0.71500	0.71500
7	1.34800	1.34800	0.82333	0.74100	0.81400	0.81400	0.82857	0.58000	0.94625	0.75700	0.58556	0.52700
8	1.38200	1.38200	0.88100	0.88100	0.92300	0.92300	0.74800	0.74800	1.02556	0.92300	0.74800	0.74800
Average Ash-Free-Dry Weight (AFDW) (mg)	**1.32750**		**0.92251**		**0.80892**		**0.79723** [b]		**0.94864**		**0.76028** [b]	
Average Biomass[2] Weight (AFDW)		**1.32750**		**0.84887**		**0.77425**		**0.66463** [b,c]		**0.82550**		**0.73263** [b]
10-Day Percent Survival	**100.0**		**92.5**		**96.3**		**83.8** [c]		**87.5** [c]		**96.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 2 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1021-AT 10,210		SS 1026-AT 10,212		SS 1028-AT 10,213		SS 1025-AT 10,214		SS 1010-AT 10,215		SS 1029-AT 10,216	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.03000	0.92700	1.06200	1.06200	1.01500	1.01500	0.86600	0.86600	0.82875	0.66300	0.76800	0.76800
2	0.77250	0.61800	0.96778	0.87100	1.02400	1.02400	0.85800	0.85800	0.89500	0.71600	0.94111	0.84700
3	0.77900	0.77900	0.96400	0.96400	1.02444	0.92200	0.87889	0.79100	0.87750	0.70200	0.82000	0.82000
4	0.81000	0.81000	0.95000	0.95000	1.11125	0.88900	0.94778	0.85300	0.95875	0.76700	0.87800	0.87800
5	0.91750	0.73400	0.89800	0.89800	1.06111	0.95500	0.89200	0.89200	0.90400	0.90400	0.90667	0.81600
6	0.83111	0.74800	0.88600	0.88600	1.05625	0.84500	0.86250	0.69000	1.18875	0.95100	0.99900	0.99900
7	0.81300	0.81300	0.89200	0.89200	0.85100	0.85100	0.89222	0.80300	1.05875	0.84700	0.97300	0.97300
8	1.02250	0.81800	0.85500	0.85500	1.11100	1.11100	0.88700	0.88700	0.93200	0.93200	0.86444	0.77800
Average Ash-Free-Dry Weight (AFDW) (mg)	**0.87195**		**0.93435**		**1.03176**		**0.88555**		**0.95544**		**0.89378**	
Average Biomass[2] Weight (AFDW)		**0.78088**		**0.92225**		**0.95150**		**0.83000**		**0.81025**		**0.85987**
10-Day Percent Survival	**90.0**		**98.8**		**92.5**		**93.8**		**85.0 [c]**		**96.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 3 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1001-AT 10,217		SS 1042-AT 10,218		SS 1009-AT 10,219		SS 1017-AT 10,220		SS 1011-AT 10,221		SS 1033-AT 10,223	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.12875	0.90300	1.45250	1.16200	1.35571	0.94900	0.98400	0.98400	0.82500	0.82500	0.90400	0.90400
2	1.64800	0.82400	0.96200	0.96200	0.99444	0.89500	0.90500	0.90500	0.96667	0.58000	0.97778	0.88000
3	0.90250	0.72200	0.99125	0.79300	1.06000	0.63600	1.03300	1.03300	0.87667	0.78900	1.01111	0.91000
4	0.94857	0.66400	0.98500	0.78800	1.06500	1.06500	1.03500	0.82800	1.07250	0.85800	0.90000	0.90000
5	0.85111	0.76600	0.92400	0.92400	0.82800	0.82800	0.97111	0.87400	0.92300	0.92300	1.26143	0.88300
6	0.89143	0.62400	1.15200	1.15200	1.33714	0.93600	0.98444	0.88600	0.85333	0.76800	0.99111	0.89200
7	0.96250	0.77000	0.97000	0.97000	1.01800	1.01800	0.79200	0.79200	0.86625	0.69300	0.99111	0.89200
8	1.17714	0.82400	1.07900	1.07900	0.96900	0.96900	1.04500	1.04500	0.84000	0.75600	1.06500	1.06500
Average Ash-Free-Dry Weight (AFDW) (mg)	**1.06375**		**1.06447**		**1.07841**		**0.96869**		**0.90293**		**1.01269**	
Average Biomass[2] Weight (AFDW)		**0.76212**		**0.97875**		**0.91200**		**0.91837**		**0.77400**		**0.91575**
10-Day Percent Survival	**73.8 [b,c]**		**92.5**		**86.3**		**95.0**		**86.3 [c]**		**91.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 4 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1034-AT 10,224		SS 1002-AT 10,225		SS 1005-AT 10,226		SS 1012-AT 10,256		Water Only Secondary Control	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.89500	0.89500	1.08222	0.97400	0.92875	0.74300	1.04556	0.94100	0.96400	0.96400
2	0.96125	0.76900	0.62800	0.62800	0.87000	0.78300	0.86571	0.60600	0.99000	0.89100
3	0.81500	0.65200	0.83000	0.83000	0.81750	0.65400	0.93625	0.74900	0.84750	0.67800
4	1.05250	0.84200	0.85600	0.85600	0.96286	0.67400	0.72200	0.36100	0.87600	0.87600
5	0.85111	0.76600	1.09125	0.87300	0.65143	0.45600	0.90556	0.81500	0.88200	0.88200
6	0.93111	0.83800	1.20429	0.84300	0.87444	0.78700	1.37625	1.10100	0.85500	0.85500
7	0.88000	0.79200	0.85625	0.68500	0.83857	0.58700	0.90100	0.90100	1.18000	1.06200
8	0.86500	0.86500	0.87500	0.70000	1.03875	0.83100	1.03300	1.03300	0.67375	0.53900
Average Ash-Free-Dry Weight (AFDW) (mg)	**0.90637**		**0.92788**		**0.87279**		**0.97317**		**0.90853**	
Average Biomass[2] Weight (AFDW)		**0.80238**		**0.79863**		**0.68938[b]**		**0.81337**		**0.84337**
10-Day Percent Survival	**88.8[c]**		**87.5[c]**		**78.8[b,c]**		**82.5[c]**		**92.5**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

GLEC

TABLE 3. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 1 of 3) ***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**Reference Sediment SS 1031-AT**	**Reference Sediment SS 1041-AT**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**
GLC#	**CS# 124**	**10,222**	**10,254**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**
1	10	10	10	8	10	9	7	8
2	10	10	10	10	10	9	10	8
3	10	10	9	10	9	9	10	8
4	10	7	10	9	10	10	10	9
5	9	10	9	9	9	8	9	10
6	10	10	9	9	9	9	8	10
7	10	8	10	10	9	10	7	9
8	10	10	9	9	9	8	9	9
10-Day Percent Survival	**98.8**	**93.8**	**95.0**	**92.5**	**93.8**	**90.0**	**87.5**	**88.8**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 3. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 2 of 3) ***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**

Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1028-AT**	**SS 1025-AT**	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS 1017-AT**
GLC#	**10,213**	**10,214**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**
1	8	10	10	9	10	3	9	10
2	9	10	9	10	10	5	10	9
3	9	8	10	10	9	4	7	10
4	9	7	10	10	10	4	9	10
5	10	9	9	10	9	7	10	7
6	9	7	10	9	9	5	10	10
7	8	9	9	9	10	8	7	8
8	8	10	10	9	10	4	8	10
10-Day Percent Survival	**87.5 [c]**	**87.5**	**96.3**	**95.0**	**96.3**	**50.0 [b,c]**	**87.5**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 3. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 3 of 3) ***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]						
Replicate Number	**SS 1011-AT**	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1012-AT**	**Water Only**
GLC#	**10,221**	**10,223**	**10,224**	**10,225**	**10,226**	**10,256**	**Secondary Control**
1	9	10	9	9	10	10	8
2	7	8	10	10	8	9	9
3	8	7	10	10	8	9	10
4	10	10	8	9	8	9	9
5	10	9	10	8	10	9	8
6	8	10	10	9	9	10	10
7	8	10	10	10	10	10	9
8	7	10	9	10	9	10	9
10-Day Percent Survival	**83.8 [c]**	**92.5**	**95.0**	**93.8**	**90.0**	**95.0**	**90.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 1 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Control CS# 124		Reference Sediment SS 1031-AT 10,222		Reference Sediment SS 1041-AT 10,254		SS 1022-AT 10,207		SS 1024-AT 10,208		SS 1032-AT 10,209	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.39400	0.39400	0.14600	0.14600	0.20300	0.20300	0.11750	0.09400	0.16300	0.16300	0.10556	0.09500
2	0.45800	0.45800	0.14100	0.14100	0.16400	0.16400	0.13600	0.13600	0.16300	0.16300	0.14000	0.12600
3	0.38300	0.38300	0.14700	0.14700	0.16556	0.14900	0.10800	0.10800	0.14556	0.13100	0.14556	0.13100
4	0.45100	0.45100	0.17429	0.12200	0.20100	0.20100	0.10222	0.09200	0.12800	0.12800	0.21100	0.21100
5	0.46889	0.42200	0.18800	0.18800	0.14778	0.13300	0.12000	0.10800	0.16889	0.15200	0.17875	0.14300
6	0.33100	0.33100	0.15200	0.15200	0.25667	0.23100	0.09667	0.08700	0.13667	0.12300	0.15333	0.13800
7	0.40900	0.40900	0.18000	0.14400	0.18700	0.18700	0.11800	0.11800	0.17444	0.15700	0.13000	0.13000
8	0.33400	0.33400	0.15400	0.15400	0.20889	0.18800	0.13667	0.12300	0.20556	0.18500	0.16625	0.13300
Average[1] Dry Weight (mg)	**0.40361**		**0.16029**		**0.19174**		**0.11688**[b,c]		**0.16064**[c]		**0.15381**[c]	
Average Biomass[2] Weight (mg)		**0.39775**		**0.14925**		**0.18200**		**0.10825**[b,c]		**0.15025**[c]		**0.13837**[c]
10-Day Percent Survival	**98.8**		**93.8**		**95.0**		**92.5**		**93.8**		**90.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 2 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1021-AT 10,210		SS 1026-AT 10,212		SS 1028-AT 10,213		SS 1025-AT 10,214		SS 1010-AT 10,215		SS 1029-AT 10,216	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.12857	0.09000	0.20500	0.16400	0.19125	0.15300	0.15100	0.15100	0.11100	0.11100	0.19667	0.17700
2	0.09100	0.09100	0.19125	0.15300	0.18778	0.16900	0.15200	0.15200	0.14556	0.13100	0.19000	0.19000
3	0.11500	0.11500	0.15375	0.12300	0.18111	0.16300	0.18625	0.14900	0.11000	0.11000	0.15500	0.15500
4	0.12000	0.12000	0.16333	0.14700	0.22889	0.20600	0.16000	0.11200	0.11400	0.11400	0.14400	0.14400
5	0.13556	0.12200	0.23500	0.23500	0.28600	0.28600	0.16889	0.15200	0.17778	0.16000	0.18200	0.18200
6	0.16500	0.13200	0.15600	0.15600	0.25667	0.23100	0.14714	0.10300	0.14000	0.14000	0.18222	0.16400
7	0.10714	0.07500	0.21000	0.18900	0.12250	0.09800	0.21222	0.19100	0.11778	0.10600	0.19889	0.17900
8	0.17889	0.16100	0.21444	0.19300	0.11500	0.09200	0.15600	0.15600	0.13000	0.13000	0.21111	0.19000
Average[1] Dry Weight (mg)	**0.13014**[b,c]		**0.19110**		**0.19615**		**0.16669**		**0.13076**[b,c]		**0.18249**	
Average Biomass[2] Weight (mg)		**0.11325**[b,c]		**0.17000**		**0.17475**		**0.14575**[c]		**0.12525**[b,c]		**0.17263**
10-Day Percent Survival	**87.5**		**88.8**		**87.5**[c]		**87.5**		**96.3**		**95.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 3 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1001-AT 10,217		SS 1042-AT 10,218		SS 1009-AT 10,219		SS 1017-AT 10,220		SS 1011-AT 10,221		SS 1033-AT 10,223	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.17400	0.17400	0.45667	0.13700	0.19111	0.17200	0.16400	0.16400	0.17111	0.15400	0.16700	0.16700
2	0.14300	0.14300	0.36000	0.18000	0.10300	0.10300	0.15667	0.14100	0.11429	0.08000	0.14625	0.11700
3	0.12000	0.10800	0.50750	0.20300	0.15714	0.11000	0.13200	0.13200	0.17750	0.14200	0.19857	0.13900
4	0.15800	0.15800	0.43500	0.17400	0.16111	0.14500	0.10800	0.10800	0.14000	0.14000	0.18400	0.18400
5	0.18556	0.16700	0.20714	0.14500	0.19200	0.19200	0.16714	0.11700	0.14600	0.14600	0.16000	0.14400
6	0.17778	0.16000	0.37800	0.18900	0.12200	0.12200	0.16400	0.16400	0.09625	0.07700	0.17500	0.17500
7	0.13100	0.13100	0.22375	0.17900	0.18714	0.13100	0.19375	0.15500	0.17625	0.14100	0.18200	0.18200
8	0.16900	0.16900	0.71250	0.28500	0.18250	0.14600	0.17900	0.17900	0.23286	0.16300	0.18900	0.18900
Average[1] Dry Weight (mg)	**0.15729[c]**		**0.41007**		**0.16200**		**0.15807[c]**		**0.15678[c]**		**0.17523**	
Average Biomass[2] Weight (mg)		**0.15125[c]**		**0.18650**		**0.14013[c]**		**0.14500[c]**		**0.13037[c]**		**0.16212**
10-Day Percent Survival	**96.3**		**50.0[b,c]**		**87.5**		**92.5**		**83.8[c]**		**92.5**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 4 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1034-AT 10,224		SS 1002-AT 10,225		SS 1005-AT 10,226		SS 1012-AT 10,256		Water Only Secondary Control	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.29222	0.26300	0.18667	0.16800	0.15800	0.15800	0.16100	0.16100	0.26625	0.21300
2	0.24500	0.24500	0.19000	0.19000	0.15500	0.12400	0.13556	0.12200	0.19222	0.17300
3	0.17400	0.17400	0.15100	0.15100	0.18875	0.15100	0.12778	0.11500	0.30200	0.30200
4	0.26875	0.21500	0.18778	0.16900	0.15750	0.12600	0.12333	0.11100	0.24222	0.21800
5	0.22800	0.22800	0.14500	0.11600	0.11900	0.11900	0.13000	0.11700	0.13125	0.10500
6	0.20900	0.20900	0.19333	0.17400	0.12556	0.11300	0.11800	0.11800	0.28300	0.28300
7	0.20100	0.20100	0.24600	0.24600	0.13600	0.13600	0.13400	0.13400	0.36333	0.32700
8	0.28778	0.25900	0.17000	0.17000	0.20222	0.18200	0.16900	0.16900	0.15556	0.14000
Average[1] Dry Weight (mg)	**0.23822**		**0.18372**		**0.15525[c]**		**0.13733[b,c]**		**0.24198**	
Average Biomass[2] Weight (mg)		**0.22425**		**0.17300**		**0.13863[c]**		**0.13088[b,c]**		**0.22012**
28-Day Percent Survival	**95.0**		**93.8**		**90.0**		**95.0**		**90.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 5. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 1 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**	**SS 1028-AT**	**SS 1025-AT**
GLC#	**CS#123**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
1	9	10	10	9	10	10	10	9
2	9	10	10	10	9	9	9	9
3	10	10	10	10	10	9	8	10
4	10	10	9	10	10	10	9	10
4-Day Percent Survival	**95.0**	**100.0**	**97.5**	**97.5**	**97.5**	**95.0**	**90.0**	**95.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

TABLE 5. **Comparison of Number of Surviving Organisms per Replicater and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 2 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS1017-AT**	**SS 1011-AT**	**SS 1031-AT**
GLC#	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**	**10,222**
1	10	10	8	10	8	10	8	10
2	8	10	10	10	9	10	10	10
3	10	10	10	10	9	9	10	9
4	10	10	10	9	10	10	10	10
10-Day Percent Survival	**95.0**	**100.0**	**95.0**	**97.5**	**90.0**	**97.5**	**95.0**	**97.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

TABLE 5. **Comparison of Number of Surviving Organisms per Replicater and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 3 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]					
Replicate Number	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1041-AT**	**SS 1012-AT**
GLC#	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
1	10	10	10	10	10	10
2	9	7	10	9	10	8
3	10	10	10	9	10	10
4	10	10	10	10	10	9
10-Day Percent Survival	**97.5**	**92.5**	**100.0**	**95.0**	**100.0**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

GLEC

Table 6a. **Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

REPLICATE NUMBER	Laboratory Control LS# 124	SS 1022-AT GLC No. 10,207	SS 1024-AT GLC No. 10, 208	SS 1032-AT GLC No. 10, 209	SS 1021-AT GLC No. 10,210	SS 1026-AT GLC No. 10,212	SS 1028-AT GLC No. 10,213	SS 1025-AT GLC No. 10,214
1	23.19	24.67	23.30	25.53	14.93	18.12	19.63	19.63
2	25.12	30.73	22.38	23.52	19.61	21.19	19.95	19.95
3	21.65	31.20	23.20	18.30	17.62	17.88	18.11	18.11
4	23.68	25.19	24.75	17.03	16.96	23.52	17.44	17.44
5	23.69	24.83	23.97	21.23	15.09	18.49	20.12	20.12
Average Wet Depurated Weight (g)	**23.5**	**27.3**	**23.5**	**21.1**	**16.8**	**19.8**	**19.1**	**19.1**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

GLEC

Table 6b. cont..... **Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

REPLICATE NUMBER	Laboratory Control LS# 123	SS 1010-AT GLC No. 10,215	SS 1029-AT GLC No. 10, 216	SS 1001-AT GLC No. 10, 217	SS 1042-AT GLC No. 10,218	SS 1009-AT GLC No. 10,219	SS 1017-AT GLC No. 10,220	SS 1011-AT GLC No. 10,221
1	27.71	18.09	18.34	20.33	19.69	16.74	20.61	20.61
2	25.14	19.16	19.98	21.27	18.08	16.67	23.37	23.37
3	19.23	23.71	20.84	22.29	19.20	17.85	17.39	17.39
4	22.67	18.63	20.06	19.12	20.28	22.27	17.60	17.60
5	21.36	19.50	17.89	17.90	21.19	22.18	20.42	20.42
Average Wet Depurated Weight (g)	**23.2**	**19.8**	**19.4**	**20.2**	**19.7**	**19.1**	**19.9**	**19.9**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

Table 6c. cont.....

Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

REPLICATE NUMBER	Laboratory Control LS# 123	SS 1010-AT GLC No. 10,222	SS 1029-AT GLC No. 10, 223	SS 1001-AT GLC No. 10, 224	SS 1042-AT GLC No. 10,225	SS 1009-AT GLC No. 10,226	SS 1017-AT GLC No. 10,254	SS 1011-AT GLC No. 10,256
1	27.71	18.09	18.34	20.33	19.69	16.74	20.61	20.61
2	25.14	19.16	19.98	21.27	18.08	16.67	23.37	23.37
3	19.23	23.71	20.84	22.29	19.20	17.85	17.39	17.39
4	22.67	18.63	20.06	19.12	20.28	22.27	17.60	17.60
5	21.36	19.50	17.89	17.90	21.19	22.18	20.42	20.42
Average Wet Depurated Weight (g)	**23.2**	**19.8**	**19.4**	**20.2**	**19.7**	**19.1**	**19.9**	**19.9**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

Table 7a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC #			**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
% Moisture	%	89.0	89.4	89.9	90.7	90.1	90.6	92.1	88.6	88.3
Acenaphthene	µg/Kg	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.75J	2.0J	<2.2
Acenaphthylene	µg/Kg	<1.2	<1.2	2.6J	2.2J	5.9	3.7	20.1	18.0	22.0
Anthracene	µg/Kg	<1.5	<1.5	6.7	7.9	14.4	8.7	39.1	53.1	39.5
Benzo(a)anthracene	µg/Kg	1.4J	1.1J	10.9	33.2	24.9	9.3	53.5	51.7	50.4
Benzo(a)pyrene	µg/Kg	21.2	29.4	36.9	45.9	76.1	47.6	70.5	82.5	52.2
Benzo(b)fluoranthene	µg/Kg	1.4J	1.9J	5.3	27.6	23.6	8.2	60.1	53.8	54.2
Benzo(g,h,i)perylene	µg/Kg	27.9	26.0	18.9	16.2	19.7	20.8	14.6	24.2	34.4
Benzo(k)fluoranthene	µg/Kg	1.6J	2.0J	7.4	39.6	40.2	13.2	64.8	77.9	60.0
Chrysene	µg/Kg	2.9J	2.3J	7.3	39.9	36.8	10.8	71.7	70.4	81.6
Dibenz(a,h)anthracene	µg/Kg	1.1J	1.1J	<0.90	<0.90	<0.90	<0.90	<0.90	4.6J	6.3J
Fluoranthene	µg/Kg	4.9	3.9	13.6	67.2	45.8	12.0	94.9	69.4	111
Fluorene	µg/Kg	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2.2J	3.5	<7.4
Indeno(1,2,3-cd)pyrene	µg/Kg	20.7	27.2	18.1	20.3	21.3	20.0	21.5	33.5	31.5
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	1.9J	<1.5	<1.5	2.5J	<1.5	<1.5	<6.0
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	2.7J	<1.4	1.8J	3.2J	<1.4	2.0J	<5.7
Naphthalene	µg/Kg	<0.76	0.89J	6.1	1.5J	2.1J	4.1	2.0J	3.0J	12.2J
Phenanthrene	µg/Kg	5.3	7.9	8.4	8.2	8.7	6.9	15.2	27.8	19.8
Pyrene	µg/Kg	4.5	3.1J	12.4	62.4	45.1	11.1	85.7	57.3	97.7

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 7b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC #			**CS# 124**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.2	<3.4	<0.55	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	6.0J	3.3J	8.0J	<7.6	5.4	8.4	7.0
Anthracene	µg/Kg	<1.5	<1.5	13.3	6.2	16.8	<9.3	9.4	18.1	13.3
Benzo(a)anthracene	µg/Kg	1.3J	0.91J	42.1	18.6	45.5	80.9	18.5	39.0	38.8
Benzo(a)pyrene	µg/Kg	19.6	16.1	56.4	54.2	40.4	45.3	40.8	57.4	65.2
Benzo(b)fluoranthene	µg/Kg	1.1J	1.2J	46.2	43.8	60.1	178	21.7	34.4	56.3
Benzo(g,h,i)perylene	µg/Kg	30.8	20.7	31.1	20.0	33.8	66.9	14.9	19.7	14.9
Benzo(k)fluoranthene	µg/Kg	1.2J	1.6J	54.0	32.9	59.8	122	29.8	46.0	58.7
Chrysene	µg/Kg	3.0J	1.5J	56.3	34.1	69.6	160	24.6	52.5	43.8
Dibenz(a,h)anthracene	µg/Kg	1.4J	<0.90	3.6J	1.7J	4.0J	10.6J	<0.90	1.8J	<0.90
Fluoranthene	µg/Kg	4.9	2.5J	84.1	39.2	108	216	30.0	76.9	60.5
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<7.4	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	27.1	18.2	14.0	27.7	17.2	48.2	21.8	19.6	20.3
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<6.0	<9.4	<1.5	<1.5	1.6J
2-Methylnaphthalene	µg/Kg	1.9J	<1.4	<2.8	<1.4	<5.7	<8.9	1.8J	1.8J	2.4J
Naphthalene	µg/Kg	<0.76	<0.76	4.0J	2.2J	5.6J	<4.8	4.4	4.1	6.0
Phenanthrene	µg/Kg	4.5	5.9	9.0	11.9	10.1J	29.8	5.7	9.3	9.5
Pyrene	µg/Kg	4.6	2.3J	84.4	36.5	99.7	237	30.1	68.6	64.7

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 7c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the *L. variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC#			**CS# 125**	**10,222**	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.8	<3.4	0.80J	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	3.8J	6.2	<6.0	8.3J	5.1	<1.2	<1.2
Anthracene	µg/Kg	<1.5	<1.5	10.9	13.1	21.1	28.2	10.2	2.2J	<1.5
Benzo(a)anthracene	µg/Kg	1.5J	0.78J	39.2	14.5	59.4	69.4	15.0	9.8	0.99J
Benzo(a)pyrene	µg/Kg	13.3	17.5	20.8	57.8	26.8	25.7	44.1	27.8	14.0
Benzo(b)fluoranthene	µg/Kg	1.6J	1.3J	40.9	14.3	64.8	107	7.8	12.3	0.63J
Benzo(g,h,i)perylene	µg/Kg	26.1	22.0	28.7	13.7	28.2	25.0	23.1	16.4	22.9
Benzo(k)fluoranthene	µg/Kg	1.3J	1.3J	44.4	22.9	68.9	64.1	10.8	16.2	<1.2
Chrysene	µg/Kg	2.8J	1.4J	53.5	22.4	100	119	12.4	13.4	1.2J
Dibenz(a,h)anthracene	µg/Kg	1.1J	<0.90	2.5J	<0.90	<4.5	5.9J	<0.90	<0.90	<0.90
Fluoranthene	µg/Kg	4.2	2.1J	76.1	32.4	158	198	23.3	16.4	2.4J
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<9.2	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	22.4	19.4	10.0	16.7	25.0	19.9J	20.2	19.7	16.0
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<7.5	<9.4	3.1J	1.9J	<1.5
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	<2.8	<1.4	<7.1	<8.9	4.8	2.5J	<1.4
Naphthalene	µg/Kg	1.2J	1.0J	<1.5	1.1J	<3.8	<4.8	14.3	2.3J	<0.76
Phenanthrene	µg/Kg	4.9	3.3J	6.1J	6.9	17.6	15.8J	9.1	7.5	3.0J
Pyrene	µg/Kg	4.3	1.8J	73.8	29.9	162	190	23.0	17.3	2.6J

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC#			**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
Arsenic	mg/Kg	0.21	1.5	1.5	1.0	0.75	0.66	0.69	0.86	1.1
Barium	mg/Kg	11.5	15.2	22.6	15.8	21.5	33.0	29.7	49.5	33.3
Cadmium	mg/Kg	0.037J	0.030J	0.041J	0.033J	0.041J	0.034J	0.027J	0.043J	0.047J
Chromium	mg/Kg	0.061J	0.11	0.31	0.30	0.37	0.39	0.22	0.23	0.36
Copper	mg/Kg	2.0	7.6	9.4	7.1	8.1	8.6	6.8	12.4	12.6
Lead	mg/Kg	0.062J	0.13	0.50	0.24	0.46	0.42	0.26	0.27	0.48
Mercury	mg/Kg	<0.0076	0.0078J	<0.0075	0.0086J	0.0075J	<0.0070	<0.0074	<0.0069	0.0081J
Nickel	mg/Kg	0.065J	0.085J	0.25	0.28	0.29	0.28	0.17	0.19	0.30
% Moisture	%	89.0	89.4	89.9	90.7	90.1	90.6	92.1	88.6	88.3
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	20.2J	14.4J	31.6	19.3J	13.9J	16.6J	37.4
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	26.2	14.9J	55.4	31.6	28.0	27.0	73.9
PCB, Total	µg/Kg	<12.5	<12.5	46.4	29.3	87.0	50.9	41.9	43.7	111

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC#			**CS# 124**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
Arsenic	mg/Kg	0.19	1.1	0.82	0.43	0.86	0.44	0.37	0.70	0.62
Barium	mg/Kg	9.6	10.7	16.5	13.1	15.2	15.2	13.1	17.5	16.0
Cadmium	mg/Kg	0.032J	0.021J	0.031J	0.043J	0.026J	0.062J	0.020J	0.027J	0.029J
Chromium	mg/Kg	0.067J	0.13	0.29	0.46	0.29	0.59	0.18	0.49	0.26
Copper	mg/Kg	1.1	3.6	5.2	4.7	4.5	4.9	3.4	4.6	3.5
Lead	mg/Kg	0.061J	0.087J	0.26	0.34	0.26	0.51	0.36	0.47	0.49
Mercury	mg/Kg	<0.0075	<0.0074	<0.0075	<0.0074	<0.0070	<0.0072	<0.0073	<0.0067	<0.0070
Nickel	mg/Kg	0.066J	0.090J	0.25	0.28	0.22	0.35	0.19	0.33	0.19
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	15.5J	53.8	15.8J	65.6	<12.5	18.2J	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	19.3J	75.4	18.1J	105	<12.5	25.8	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	34.8	129	33.9	171	<12.5	44.0	<12.5

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC#			**CS# 125**	**10,222**	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
Arsenic	mg/Kg	0.18	1.6	1.1	1.0	0.62	0.99	0.98	0.26	0.25
Barium	mg/Kg	10.7	18.6	20.2	22.9	18.2	17.4	27.2	14.8	15.7
Cadmium	mg/Kg	0.028J	0.034J	0.047J	0.042J	0.031J	0.029J	0.047J	0.036J	0.042J
Chromium	mg/Kg	0.11	0.11	0.30	0.28	0.26	0.19	0.27	0.50	0.32
Copper	mg/Kg	1.8	4.0	4.4	3.4	2.7	2.6	3.1	3.3	3.4
Lead	mg/Kg	0.058J	0.10	0.30	0.32	0.21	0.20	0.40	0.22	0.14
Mercury	mg/Kg	<0.0069	<0.0077	0.0084J	0.0086J	<0.0073	0.0079J	0.0099J	0.0073J	<0.0065
Nickel	mg/Kg	0.063J	0.10	0.27	0.22	0.19	0.21	0.25	0.27	0.32
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	14.6J	23.3J	18.2J	<12.5	16.9J	<12.5	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	13.9J	29.4	19.6J	<12.5	17.5J	<12.5	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	28.5	52.7	37.8	<12.5	34.4	<12.5	<12.5

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 9a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC #		**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
2,3,7,8-TCDF	0.12	0.2	ND	0.53	0.85	ND	ND	0.17	0
2,3,7,8-TCDD	ND	ND	ND	0.26	ND	ND	ND	ND	ND
1,2,3,7,8-PeCDF	ND	ND	ND	0.27	ND	ND	ND	ND	ND
2,3,4,7,8-PeCDF	ND	0	ND	0.38	0	0	ND	0	0
1,2,3,7,8-PeCDD	ND	ND	ND	0	0.31	0	ND	0.078	ND
1,2,3,4,7,8-HxCDF	ND	ND	ND	0.39	0.28	0	0.12	0	0.21
1,2,3,6,7,8-HxCDF	ND	ND	0	0	0	0.12	ND	ND	0
2,3,4,6,7,8-HxCDF	ND	0	ND	0.25	0.21	ND	0	0	0
1,2,3,7,8,9-HxCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	0.082	ND	0	ND	ND	0	0.097	ND
1,2,3,6,7,8-HxCDD	ND	0.086	0	0	0	0.41	0.41	0.31	0
1,2,3,7,8,9-HxCDD	ND	ND	ND	0.28	ND	ND	ND	0	0.28
1,2,3,4,6,7,8-HpCDF	0.042	0	3.1	7.7	4.3	3.1	1.6	1.7	3
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0	3.1	2.8	4	3.1	8.1	4.7	9.8
OCDF	ND	ND	1.8	1.9	2.3	1.4	2.6	1.7	0
OCDD	0.32	0.43	34	17	33	27	77	42	95
Total TCDF	0.27	2.1	0.25	4.1	4.9	0.58	0.64	1	3.1
Total TCDD	ND	0.25	ND	2.1	ND	ND	ND	0.19	0.37
Total PeCDF	ND	ND	1.2	6.9	4.4	0.45	1.4	1.3	3.4
Total PeCDD	ND	0.091	0.25	1.4	1.1	0.14	0.28	0.65	0.94
Total HxCDF	ND	ND	2.4	11	4	2.8	1.4	1.5	3.5
Total HxCDD	0.048	0.26	1.7	4.2	2.2	1.4	4.9	3.6	4.4
Total HpCDF	0.084	0.074	6.1	14	8.2	6	4.3	3.6	6.7
Total HpCDD	0.12	0.26	9	6.3	14	11	41	23	44
TEQ[2]	0.12	0.18	0.32	1	0.98	0.4	0.4	0.34	0.58

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND)

Table 9b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC #		CS# 124	10,215	10,216	10,217	10,218	10,219	10,220	10,221
2,3,7,8-TCDF	ND	0.14	0.49	0.19	0	0	0.35	0	0.3
2,3,7,8-TCDD	ND	ND	0	ND	ND	ND	0.13	ND	0.23
1,2,3,7,8-PeCDF	ND	ND	0.25	ND	ND	ND	0.23	ND	0.43
2,3,4,7,8-PeCDF	ND	0.087	0.63	0.31	0	0.64	0.81	0.23	1.2
1,2,3,7,8-PeCDD	ND	0.082	0.58	0.12	0.36	0.46	0.43	0	0.61
1,2,3,4,7,8-HxCDF	ND	ND	0.43	0.12	0.3	0	0.79	0	0
1,2,3,6,7,8-HxCDF	ND	0.079	0.37	ND	0.29	0.17	0.71	0.16	1.4
2,3,4,6,7,8-HxCDF	ND	0	0.42	0.14	0.33	0	0.4	0.15	0.68
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	ND	ND	0	ND	0
1,2,3,4,7,8-HxCDD	ND	ND	0.23	0.12	0	0	0	ND	0
1,2,3,6,7,8-HxCDD	ND	0.091	1.2	0.26	0.93	3.2	1.2	0	1.9
1,2,3,7,8,9-HxCDD	ND	ND	0.47	ND	0	1.6	0.39	0	0.52
1,2,3,4,6,7,8-HpCDF	ND	0	8	1.1	7.1	1.3	17	2.8	25
1,2,3,4,7,8,9-HpCDF	ND	0	0.28	0	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0.18	4	1.5	3.4	45	2.8	2.8	3.3
OCDF	ND	0.53	2.2	1	2.4	0	3	0.9	6.6
OCDD	0	0.74	23	11	22	130	13	17	16
Total TCDF	0.14	0.78	4.4	4.2	3.9	7	6	3.5	8.9
Total TCDD	ND	0.26	3	ND	1.2	1.6	1.3	ND	2.3
Total PeCDF	ND	0.087	8.5	3	6.6	7.7	14	3.4	21
Total PeCDD	ND	0.19	1	0.21	1.4	13	2.4	0.68	5.1
Total HxCDF	ND	0.19	13	1.7	10	1.5	20	3.4	31
Total HxCDD	ND	0.22	6.4	1.2	5	51	6.5	2.2	9.4
Total HpCDF	ND	ND	16	2.1	13	2.9	29	5.6	43
Total HpCDD	ND	0.18	11	4.2	11	91	6.8	9.7	7.4
TEQ[2]	0.11	0.23	1.5	0.41	1	2	1.4	0.47	2.1

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND)

Table 9c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC #		CS# 125	10,222	10,223	10,224	10,225	10,226	10,254	10,256
2,3,7,8-TCDF	ND	0.39	0.72	0.29	0.56	0.55	0.33	0.32	0.11
2,3,7,8-TCDD	ND	ND	0	ND	0.17	0	0.095	ND	ND
1,2,3,7,8-PeCDF	ND	ND	0.18	0	0.16	0	0	0.086	ND
2,3,4,7,8-PeCDF	ND	ND	0	0.23	0.39	0.38	0.19	0	ND
1,2,3,7,8-PeCDD	ND	ND	0.26	0.16	0.29	0.29	0	0.19	ND
1,2,3,4,7,8-HxCDF	ND	ND	0	0.18	0.22	0.31	0.16	0	ND
1,2,3,6,7,8-HxCDF	0.064	ND	0.37	0.23	0	0	0.19	0.24	ND
2,3,4,6,7,8-HxCDF	ND	ND	0.2	0	0.13	0.24	0.18	0.1	ND
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	0	0.098	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	ND	0.18	ND	0	0.16	0	0	ND
1,2,3,6,7,8-HxCDD	ND	ND	0.81	0.37	0.58	0.86	0.55	0	0.055
1,2,3,7,8,9-HxCDD	ND	ND	0.33	0	0	0.26	0.22	0	ND
1,2,3,4,6,7,8-HpCDF	0.089	0	5.6	2.9	3.7	5.5	6.6	5.1	0
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0.096	0.5	2.8	2.2	2	3	4.9	2.1	0
OCDF	ND	ND	1.6	1.3	1.2	1.4	2.5	1.1	ND
OCDD	0	0	15	16	11	16	81	9.7	0.53
Total TCDF	ND	1.7	7.4	2.9	7.2	5.6	2.7	2	0.71
Total TCDD	ND	ND	2.9	0.25	1.9	2.2	0.37	0.95	0.29
Total PeCDF	ND	ND	7.4	3.1	6.7	7.5	4	4.3	ND
Total PeCDD	0.086	ND	3.1	0.94	2.5	2.9	1.1	1.6	0.086
Total HxCDF	0.14	ND	9	3.6	5.4	8.5	6.2	6.5	0.045
Total HxCDD	ND	ND	5.7	1.4	3.6	5.6	4.9	2.8	0.19
Total HpCDF	0.089	ND	11	5.7	7	10	13	9.5	ND
Total HpCDD	0.17	0.5	7	6.4	5.7	8.3	18	5.1	ND
TEQ[2]	0.17	0.29	0.89	0.47	0.84	0.9	0.58	0.55	0.087

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND).

Table 10. (page 1 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	Temperature (°C) (range) N=22	pH (s.u.) (range) N=4	Dissolved Oxygen (mg/L) (range) N=22	Specific Conductivity (µS/cm) (range) N=4	Hardness (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	Alkalinity (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	Ammonia (mg/L as N) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
Control CS# 124	**22.6** (22.0-23.0)	**7.70** (7.45-7.97)	**4.1** (2.7-7.5)	**337** (331-343)	**148** (144-152)	**114** (108-120)	**1.06** (0.81-1.30
SS 1022-AT 10,207	**22.8** (22.1-23.0)	**7.70** (7.50-7.90)	**5.3** (4.0-7.4)	**325** (315-332)	**140** (132-152)	**95** (92-100)	**0.14** (0.13-0.15)
SS 1024-AT 10,208	**22.7** (22.1-23.0)	**7.56** (7.48-7.62)	**5.1** (3.9-6.3)	**311** (305-319)	**137** (124-148)	**100** (98-102)	**0.16** (0.14-0.20
SS 1032-AT 10,209	**22.7** (22.0-22.9)	**7.58** (7.51-7.64)	**5.3** (3.8-6.5)	**304** (299-309)	**130** (124-136)	**94** (90-98)	**0.17** (0.13-0.20)
SS 1021-AT 10,210	**22.7** (22.3-22.9)	**7.67** (7.56-7.78)	**5.2** (4.1-6.6)	**317** (316-319)	**140** (140-140)	**100** (98-102)	**0.16** (0.14-0.18)
SS 1026-AT 10,212	**22.7** (22.3-23.0)	**7.54** (7.49-7.57)	**5.0** (3.4-6.7)	**311** (308-315)	**132** (124-140)	**96** (92-100)	**0.22** (0.17-0.27)
SS 1028-AT 10,213	**22.7** (22.3-22.9)	**7.67** (7.65-7.71)	**4.7** (3.4-6.2)	**322** (318-324)	**135** (132-136)	**107** (106-108)	**0.34** (0.21-0.60)
SS 1025-AT 10,214	**22.7** (22.3-22.9)	**7.53** (7.50-7.56)	**4.9** (3.0-6.3)	**306** (302-310)	**132** (124-140)	**94** (90-98)	**0.24** (0.15-0.33)
SS 1010-AT 10,215	**22.6** (22.1-22.9)	**7.58** (7.49-7.67)	**4.9** (3.9-6.7)	**310** (307-312)	**132** (128-136)	**100** (98-102)	**0.16** (0.13-0.19)
SS 1029-AT 10,216	**22.6** (22.3-22.8)	**7.88** (7.63-8.17)	**4.7** (4.0-6.2)	**336** (329-341)	**152** (148-156)	**120** (108-132)	**0.42** (0.38-0.45)
SS 1001-AT 10,217	**22.7** (22.1-23.6)	**7.59** (7.48-7.67)	**5.1** (3.3-6.8)	**311** (308-314)	**140** (136-144)	**98** (96-100)	**0.22** (0.16-0.28)
SS 1042-AT 10,218	**22.8** (22.2-23.6)	**7.84** (7.69-7.99)	**4.5** (3.2-6.1)	**350** (342-364)	**150** (140-160)	**123** (122-124)	**0.72** (0.70-0.73)

Table 10. (page 2 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=22	**pH (s.u.)** (range) N=4	**Dissolved Oxygen (mg/L)** (range) N=22	**Specific Conductivity (µS/cm)** (range) N=4	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
SS 1009-AT 10,219	**22.8** (22.2-23.6)	**7.59** (7.49-7.69)	**5.0** (3.8-6.6)	**305** (298-311)	**134** (132-136)	**97** (96-98)	**0.16** (0.15-0.17)
SS1017-AT 10,220	**22.8** (22.2-23.7)	**7.52** (7.46-7.58)	**4.9** (3.8-6.5)	**308** (304-312)	**130** (128-132)	**97** (96-98)	**0.21** (0.16-0.25)
SS 1011-AT 10,221	**22.8** (22.2-23.6)	**7.63** (7.51-7.70)	**5.3** (4.0-6.4)	**310** (306-313)	**130** (120-140)	**97** (96-98)	**0.15** (0.14-0.16)
SS 1031-AT 10,222	**22.8** (22.2-23.6)	**7.49** (7.39-7.60)	**5.0** (3.6-6.2)	**303** (300-306)	**129.3** (124-132)	**96** (96-96)	**0.24** (0.16-0.28)
SS 1033-AT 10,223	**22.7** (22.2-23.5)	**7.51** (7.32-7.81)	**4.6** (3.3-6.2)	**313** (301-326)	**132** (124-140)	**95** (86-104)	**0.26** (0.19-0.33)
SS 1034-AT 10,224	**22.8** (22.2-23.5)	**7.32** (7.25-7.41)	**4.7** (4.0-5.7)	**312** (303-319)	**122** (120-124)	**95** (90-100)	**1.49** (0.30-2.68)
SS 1002-AT 10,225	**22.8** (22.2-23.6)	**7.48** (7.37-7.60)	**4.9** (4.0-5.8)	**303** (289-318)	**126** (120-132)	**94** (88-100)	**0.44** (0.22-0.65)
SS 1005-AT 10,226	**22.8** (22.2-23.5)	**7.57** (7.50-7.66)	**5.1** (3.4-6.2)	**305** (299-311)	**132** (120-144)	**96** (94-98)	**0.19** (0.13-0.24)
SS 1041-AT 10,254	**22.8** (22.2-23.6)	**7.68** (7.48-7.87)	**5.7** (4.4-6.9)	**321** (310-331)	**140** (136-144)	**104** (98-110)	**0.31** (0.15-0.46)
SS 1012-AT 10,256	**22.8** (22.2-23.4)	**7.29** (7.22-7.36)	**6.0** (5.4-6.5)	**277.2** (261-293)	**116** (108-124)	**81** (74-88)	**0.78** (0.23-1.33)
Water Only Secondary Control	**22.8** (22.2-23.1)	**7.91** (7.66-8.16)	**5.8** (4.4-8.4)	**311** (307-315)	**138** (136-140)	**103** (100-106)	**0.30** (0.10-0.49)

Table 11. (page 1 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	Temperature (°C) (range) N=58	pH (s.u.) (range) N=28	Dissolved Oxygen (mg/L) (range) N=58	Specific Conductivity (µS/cm) (range) N=12	Hardness (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	Alkalinity (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	Ammonia (mg/L as N) (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
Control CS# 124	**22.5** (22.1-23.0)	**7.83** (7.65-8.20)	**5.8** (4.8-6.6)	**330** (313-353)	**142** (132-152)	**113** (106-120)	**0.71** (0.11-1.30)
SS 1022-AT 10,207	**22.7** (22.1-23.1)	**7.77** (7.62-7.97)	**6.6** (5.4-7.5)	**318** (308-333)	**135** (132-136)	**97** (92-104)	**0.13** (0.12-0.15)
SS 1024-AT 10,208	**22.6** (22.1-23.1)	**7.71** (7.49-7.93)	**6.6** (5.3-7.6)	**311** (305-316)	**130** (124-136)	**102** (98-106)	**0.17** (0.13-0.20)
SS 1032-AT 10,209	**22.7** (22.1-23.1)	**7.84** (7.62-8.05)	**6.8** (6.0-7.6)	**309** (301-315)	**130** (124-136)	**96** (90-102)	**0.17** (0.14-0.20)
SS 1021-AT 10,210	**22.7** (22.1-23.1)	**7.90** (7.71-8.12)	**6.8** (5.3-8.0)	**314** (306-317)	**144** (140-148)	**101** (98-104)	**0.17** (0.15-0.18)
SS 1026-AT 10,212	**22.7** (22.2-23.1)	**7.98** (7.53-8.31)	**6.5** (5.3-7.9)	**322** (306-338)	**136** (124-148)	**100** (92-108)	**0.20** (0.13-0.27)
SS 1028-AT 10,213	**22.7** (22.2-23.1)	**8.04** (7.59-8.59)	**6.2** (5.1-7.6)	**325** (312-344)	**136** (132-140)	**107** (106-108)	**0.36** (0.11-0.60)
SS 1025-AT 10,214	**22.7** (22.1-23.1)	**7.91** (7.44-8.18)	**6.6** (5.6-7.7)	**315** (299-327)	**130** (124-136)	**97** (90-104)	**0.23** (0.12-0.33)
SS 1010-AT 10,215	**22.7** (22.1-23.2)	**7.76** (7.49-7.94)	**6.8** (6.1-7.7)	**310** (306-313)	**138** (128-148)	**101** (98-104)	**0.16** (0.12-0.19)
SS 1029-AT 10,216	**22.7** (22.4-23.2)	**8.03** (7.54-8.42)	**6.7** (5.1-7.9)	**329** (315-386)	**147** (140-156)	**117** (110-132)	**0.22** (0.10-0.45)
SS 1001-AT 10,217	**22.7** (22.3-23.0)	**7.74** (7.54-7.99)	**6.7** (5.5-7.5)	**312** (308-315)	**138** (136-140)	**98** (96-100)	**0.20** (0.12-0.28)
SS 1042-AT 10,218	**22.8** (22.5-23.0)	**8.08** (7.49-8.72)	**5.9** (4.5-7.6)	**340** (328-353)	**140** (140-140)	**116** (108-124)	**0.42** (0.14-0.70)

Table 11. (page 2 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=28	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=12	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
SS 1009-AT 10,219	**22.7** (22.2-23.1)	**7.81** (7.64-8.09)	**6.7** (4.9-7.8)	**300** (238-319)	**136** (132-140)	**99** (96-102)	**0.16** (0.15-0.17)
SS 1017-AT 10,220	**22.8** (22.3-23.1)	**7.77** (7.57-7.98)	**6.8** (6.0-8.1)	**310** (304-314)	**132** (132-132)	**100** (96-104)	**0.22** (0.19-0.25)
SS 1011-AT 10,221	**22.9** (22.3-23.2)	**7.82** (7.69-7.98)	**6.8** (6.1-8.1)	**310** (304-315)	**130** (120-140)	**100** (96-104)	**0.17** (0.16-0.18)
SS 1031-AT 10,222	**22.8** (22.4-23.1)	**7.79** (7.55-8.05)	**6.7** (5.7-8.1)	**309** (299-315)	**136** (124-148)	**102** (96-108)	**0.21** (0.13-0.28)
SS 1033-AT 10,223	**22.8** (22.3-23.3)	**8.08** (7.39-8.74)	**6.1** (4.9-7.9)	**325** (302-356)	**132** (124-140)	**93** (86-100)	**0.24** (0.14-0.33)
SS 1034-AT 10,224	**22.8** (22.3-23.2)	**8.04** (7.28-8.80)	**5.9** (4.6-7.3)	**332** (299-361)	**138** (120-156)	**104** (100-108)	**1.39** (0.10-2.68)
SS 1002-AT 10,225	**22.9** (22.4-23.4)	**7.84** (7.30-8.25)	**6.1** (5.4-7.5)	**311** (284-329)	**128** (120-136)	**94** (88-100)	**0.36** (0.06-0.65)
SS 1005-AT 10,226	**22.9** (22.2-23.6)	**7.78** (7.60-7.97)	**6.6** (4.7-7.5)	**307** (300-311)	**132** (120-144)	**98** (94-102)	**0.16** (0.08-0.24)
SS 1041-AT 10,254	**22.9** (22.5-23.6)	**7.91** (7.76-8.15)	**7.0** (6.2-7.7)	**315** (304-333)	**138** (136-140)	**108** (106-110)	**0.30** (0.13-0.46)
SS 1012-AT 10,256	**22.9** (22.3-23.8)	**7.59** (7.19-7.86)	**6.9** (5.9-7.8)	**288.0** (245-301)	**118** (108-128)	**86** (74-98)	**0.74** (0.15-1.33)
Water Only Secondary Control	**22.7** (22.2-23.1)	**7.94** (7.76-8.13)	**7.0** (5.55-8.0)	**311** (307-315)	**142** (140-144)	**100** (100-100)	**0.11** (0.10-0.11)

Table 12.
(page 1 of 2)

Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 4-Day Sediment Toxicity Screening Tests Conducted October 04-07, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	Temperature (°C) (range) N=10	pH (s.u.) (range) N=4	Dissolved Oxygen (mg/L) (range) N=10	Specific Conductivity (µS/cm) (range) N=4	Hardness (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207	Alkalinity (CaCO3 mg/L) (range) N=2, N=1 for GLC 10207	Ammonia (mg/L as N) (range) N=2, N=1 for GLC 10207
Control CS# 123	**22.7** (22.5-23.1)	**7.82** (7.74-7.91)	**5.2** (3.2-5.9)	**335** (306-365)	**162** (156-168)	**132** (124-140)	**0.77** (0.63-0.90)
SS 1022-AT 10,207	**22.8** (22.5-23.0)	**7.67** (7.55-7.78)	**5.8** (5.2-6.2)	**309** (298-314)	**144** (144-144)	**96** (96-96)	**0.11** (0.11-0.11)
SS 1024-AT 10,208	**22.7** (22.6-23.0)	**7.62** (7.58-7.65)	**6.1** (5.6-6.7)	**305** (299-311)	**132** (124-140)	**99** (98-100)	**0.16** (0.13-0.18)
SS 1032-AT 10,209	**22.8** (22.5-23.0)	**7.67** (7.60-7.76)	**6.5** (6.0-6.8)	**298** (295-303)	**128** (124-132)	**96** (90-100)	**0.19** (0.14-0.24)
SS 1021-AT 10,210	**22.8** (22.6-22.9)	**7.77** (7.73-7.83)	**6.5** (6.0-7.0)	**308** (307-308)	**142** (140-144)	**99** (98-100)	**0.12** (0.11-0.13)
SS 1026-AT 10,212	**22.7** (22.5-22.9)	**7.59** (7.51-7.71)	**6.3** (5.5-7.1)	**300** (297-303)	**132** (120-144)	**94** (90-98)	**0.18** (0.14-0.20)
SS 1028-AT 10,213	**22.7** (22.5-22.9)	**7.61** (7.54-7.70)	**5.9** (4.7-6.7)	**309** (300-316)	**128** (128-128)	**105** (104-106)	**0.30** (0.20-0.36)
SS 1025-AT 10,214	**22.8** (22.6-22.9)	**7.53** (7.45-7.61)	**6.1** (5.4-6.7)	**298** (295-301)	**128** (124-132)	**94** (90-98)	**0.17** (0.13-0.20)
SS 1010-AT 10,215	**22.8** (22.6-22.9)	**7.65** (7.60-7.70)	**6.4** (5.9-6.9)	**302** (301-303)	**134** (132-136)	**100** (100-100)	**0.10** (0.09-0.11)
SS 1029-AT 10,216	**22.8** (22.6-22.9)	**8.03** (8.00-8.05)	**6.0** (5.2-6.6)	**341** (338-345)	**160** (152-168)	**123** (122-124)	**0.27** (0.11-0.43)

Table 12.
(page 2 of 2)

Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 4-Day Sediment Toxicity Screening Tests Conducted October 04-07, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	Temperature (°C) (range) N=10	pH (s.u.) (range) N=4	Dissolved Oxygen (mg/L) (range) N=10	Specific Conductivity (µS/cm) (range) N=4	Hardness (CaCO3 mg/L) (range) N=2, N=3 for GLC 10207	Alkalinity (CaCO3 mg/L) (range) N=2, N=1 for GLC 10207	Ammonia (mg/L as N) (range) N=2, N=1 for GLC 10207
SS 1001-AT 10,217	**22.7** (22.6-22.9)	**7.61** (7.55-7.67)	**6.1** (5.4-6.4)	**302** (300-304)	**132** (124-140)	**100** (100-100)	**0.18** (0.11-0.25)
SS 1042-AT 10,218	**22.7** (22.5-22.8)	**7.77** (7.58-7.99)	**5.6** (4.2-6.3)	**334** (329-337)	**150** (148-152)	**116** (116-116)	**0.27** (0.26-0.28)
SS 1009-AT 10,219	**22.7** (22.6-22.8)	**7.68** (7.59-7.77)	**6.4** (5.9-6.9)	**300** (298-302)	**130** (124-136)	**100** (96-102)	**0.09** (0.07-0.13)
SS1017-AT 10,220	**22.7** (22.6-22.9)	**7.65** (7.60-7.69)	**6.5** (6.2-6.8)	**300** (296-303)	**132** (128-136)	**99** (98-100)	**0.14** (0.12-0.15)
SS 1011-AT 10,221	**22.8** (22.5-23.0)	**7.72** (7.60-7.80)	**6.7** (6.4-7.1)	**305** (302-310)	**130** (124-136)	**102** (100-104)	**0.13** (0.08-0.17)
SS 1031-AT 10,222	**22.8** (22.7-22.9)	**7.54** (7.43-7.61)	**6.5** (5.7-6.9)	**297** (294-301)	**128** (124-132)	**98** (96-100)	**0.25** (0.22-0.28)
SS 1033-AT 10,223	**22.8** (22.7-22.9)	**7.58** (7.42-7.78)	**6.2** (5.0-6.8)	**300** (294-306)	**126** (124-128)	**93** (84-102)	**0.31** (0.27-0.34)
SS-1034-AT 10,224	**22.8** (22.6-22.9)	**7.42** (7.28-7.54)	**6.1** (5.6-6.7)	**307** (292-321)	**127** (126-128)	**101** (98-104)	**1.50** (0.60-2.40)
SS 1002-AT 10,225	**22.8** (22.7-22.9)	**7.54** (7.35-7.74)	**6.2** (5.8-6.6)	**284** (247-303)	**128** (124-136)	**93** (88-98)	**0.32** (0.18-0.46)
SS 1005-AT 10,226	**22.8** (22.7-23.0)	**7.71** (7.56-7.84)	**6.3** (5.9-6.9)	**304** (295-315)	**134** (120-148)	**94** (88-100)	**0.14** (0.12-0.15)
SS 1041-AT 10,254	**22.8** (22.6-22.9)	**7.79** (7.74-7.85)	**6.5** (6.0-7.0)	**311** (306-315)	**138** (136-140)	**106** (104-108)	**0.15** (0.13-0.16)
SS 1012-AT 10,256	**22.8** (22.6-22.9)	**7.39** (7.27-7.51)	**6.6** (5.9-7.2)	**272.6** (267-279)	**112** (104-120)	**90** (78-102)	**0.80** (0.55-1.04)

Table 13. **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 5, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=10	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=10	**Flows** (ml/min) N=145	**Hardness (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10207, 10208, 10209,10210, 10213, and 10214	**Alkalinity (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10207, 10209, 10210, and 10213	**Ammonia (mg/L as N)** (range) N=5, N=9 for GLC 10207 and 10216 N=6 for GLC 10212
Control CS# 124	**22.8** (22.0-23.6)	**7.94** (7.76-8.29)	**6.6** (5.0-8.4)	**320** (313-332)	**4.9** (3.2-6.5)	**135** (128-148)	**107** (104-114)	**0.55** (0.13-1.04)
SS 1022-AT 10,207	**22.8** (22.0-23.7)	**8.00** (7.82-8.28)	**7.0** (6.0-8.4)	**311** (305-317)	**4.8** (3.3-6.2)	**132** (120-144)	**103** (100-112)	**0.34** (0.07-0.46)
SS 1024-AT 10,208	**22.7** (22.1-23.5)	**7.99** (7.84-8.28)	**7.2** (5.9-8.5)	**308** (298.2-313)	**4.9** (3.2-7.0)	**129** (124-132)	**103** (100-108)	**0.26** (0.08-0.41)
SS 1032-AT 10,209	**22.8** (22.0-23.5)	**8.10** (8.00-8.31)	**7.4** (6.4-8.5)	**309** (301-315)	**4.7** (3.1-7.0)	**130** (124-140)	**103** (98-110)	**0.30** (0.09-0.46)
SS 1021-AT 10,210	**22.7** (22.1-23.4)	**8.05** (7.90-8.32)	**7.3** (6.4-8.6)	**311** (301-317)	**4.9** (3.4-6.4)	**134** (124-148)	**104** (102-112)	**0.28** (0.09-0.46)
SS 1026-AT 10,212	**22.6** (22.1-23.2)	**8.06** (7.93-8.28)	**7.3** (5.4-8.6)	**309** (302-318)	**4.7** (3.2-7.0)	**134.4** (124-148)	**104** (100-108)	**0.33** (0.11-0.69)
SS 1028-AT 10,213	**22.7** (22.0-23.4)	**8.05** (7.87-8.32)	**7.1** (5.3-8.5)	**311** (306-317)	**5.4** (3.5-7.0)	**136** (124-148)	**105** (100-110)	**0.35** (0.11-0.59)
SS 1025-AT 10,214	**22.7** (22.2-23.1)	**7.92** (7.65-8.26)	**6.6** (4.0-8.6)	**310** (302-318)	**4.9** (3.2-7.0)	**137** (128-152)	**102** (100-110)	**0.37** (0.08-0.53)

Table 14. **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	Temperature (°C) (range) N=58	pH (s.u.) (range) N=10	Dissolved Oxygen (mg/L) (range) N=58	Specific Conductivity (µS/cm) (range) N=10	Flows (ml/min) N=145	Hardness (CaCO3 mg/L) (range) N=5, N=6 for GLC 10215, N=7 10216	Alkalinity (CaCO3 mg/L) (range) N=5, N=6 for GLC 10216 N=7 10215	Ammonia (mg/L as N) (range) N=5, N=6 for GLC 10215, 10217, 10218, 10219, and 10221
Control CS# 124	**22.8** (22.2-23.3)	**7.97** (7.80-8.25)	**7.1** (6.0-9.0)	**318** (308-328)	**4.8** (3.2-7.0)	**136** (128-140)	**101** (96-106)	**0.52** (0.18-0.97)
SS 1010-AT 10,215	**22.8** (22.3-23.5)	**8.00** (7.90-8.25)	**7.3** (6.6-8.6)	**310** (299.7-322.9)	**4.9** (3.0-7.0)	**131** (124-136)	**99** (98-100	**0.36** (0.04-0.62)
SS 1029-AT 10,216	**22.8** (22.3-23.4)	**8.05** (7.89-8.34)	**7.2** (6.4-8.4)	**321** (312-335)	**4.7** (3.2-6.2)	**139** (132-152)	**106** (98-110)	**0.36** (0.12-0.96)
SS 1001-AT 10,217	**22.8** (22.3-23.3)	**8.02** (7.85-8.26)	**7.3** (6.7-8.4)	**310** (300-322)	**5.0** (3.4-6.9)	**135** (124-160)	**101** (96-108)	**0.31** (0.06-0.74)
SS 1042-AT 10,218	**22.8** (22.2-23.3)	**8.04** (7.90-8.27)	**7.5** (6.8-8.3)	**312** (307-319)	**5.1** (3.2-6.6)	**136** (124-148)	**99** (92-104)	**0.37** (0.09-0.86)
SS 1009-AT 10,219	**22.7** (22.2-23.1)	**8.06** (7.90-8.27)	**7.5** (6.8-8.4)	**309** (298.1-318)	**4.9** (3.0-6.6)	**132** (124-136)	**104** (100-112)	**0.30** (0.03-0.70)
SS1017-AT 10,220	**22.8** (22.3-23.2)	**8.01** (7.87-8.25)	**7.3** (6.6-8.4)	**311** (299.1-327)	**4.9** (3.7-6.8)	**134** (124-144)	**98** (94-100)	**0.35** (0.04-0.71)
SS 1011-AT 10,221	**22.7** (22.1-23.1)	**7.99** (7.82-8.24)	**7.4** (6.1-8.4)	**312** (298.7-325)	**4.5** (3.1-6.6)	**130** (124-140)	**101** (100-104)	**0.34** (0.05-0.81)

Table 15. **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=28	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=12	**Flows** (ml/min) N=145	**Hardness (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10222, 10223, and 10225, N=7 for GLC 10224	**Alkalinity (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10224, and 10225, N= 7 for GLC 10223	**Ammonia (mg/L as N)** (range) N=5, N=6 for GLC 10222, 10223, 10224, 10225 and 10254
Control CS#125	**22.8** (22.4-23.6)	**7.87** (7.64-8.28)	**6.4** (5.0-8.4)	**321** (311-333)	**4.3** (3.1-5.6)	**136.8** (128-144)	**106.4** (102-112)	**0.31** (0.14-0.91)
SS 1031-AT 10,222	**22.9** (22.4-23.6)	**7.86** (7.67-8.19)	**6.9** (5.7-8.3)	**307** (301-313)	**4.7** (3.2-6.0)	**135** (132-140)	**98** (96-102)	**0.27** (0.06-0.92)
SS 1033-AT 10,223	**22.8** (22.3-23.5)	**7.96** (7.74-8.26)	**7.2** (6.0-8.5)	**310** (305-315)	**4.5** (3.0-6.6)	**131** (128-136)	**99** (98-100)	**0.76** (0.07-1.72)
SS-1034-AT 10,224	**22.9** (22.3-23.6)	**7.96** (7.75-8.23)	**7.3** (6.4-8.4)	**308** (303-312)	**4.8** (3.6-6.6)	**134** (128-140)	**97** (92-100)	**0.39** (0.10-1.02)
SS 1002-AT 10,225	**22.8** (22.3-23.4)	**7.88** (7.55-8.22)	**7.1** (5.2-8.4)	**305** (299.6-310)	**4.8** (3.7-6.2)	**134** (124-140)	**97** (92-100)	**0.42** (0.09-0.93)
SS 1005-AT 10,226	**22.8** (22.4-23.5)	**8.04** (7.87-8.29)	**7.5** (6.4-8.4)	**310** (305-314)	**4.4** (3.2-5.8)	**137** (124-148)	**101** (100-104)	**0.31** (0.04-0.79)
SS 1041-AT 10,254	**22.9** (22.5-23.5)	**8.05** (7.88-8.34)	**7.5** (6.2-8.5)	**313** (305-317)	**4.8** (3.2-6.4)	**136** (132-140)	**104** (100-106)	**0.26** (0.08-0.63)
SS 1012-AT 10,256	**22.8** (22.3-23.4)	**7.85** (7.59-8.04)	**6.9** (4.7-8.2)	**305** (295.4-314)	**4.6** (3.0-6.4)	**134** (124-140)	**99** (96-104)	**0.44** (0.20-0.80)

Table 16. (page 1 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	10-Day Survival	10-Day Growth[1] (AFDW)	10-Day Biomass[2] (AFDW)
SS 1022-AT 10,207	c	b	b,c
SS 1024-AT 10,208	c		
SS 1032-AT 10,209		b	b
SS 1021-AT 10,210			
SS 1026-AT 10,212			
SS 1028-AT 10,213			
SS 1025-AT 10,214			
SS 1010-AT 10,215	c		
SS 1029-AT 10,216			
SS 1001-AT 10,217	b,c		
SS 1042-AT 10,218			

[1] Growth is average Ash-Free-Dry-Weight (AFDW) of surviving organisms
[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 16. (page 2 of 2) **Summary of Statistically Significant Differences ($p < 0.05$) Between the Reference Sediments and Investigative Sediment Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	10-Day Survival	10-Day Growth[1] (AFDW)	10-Day Biomass[2] (AFDW)
SS 1009-AT 10,219			
SS1017-AT 10,220			
SS 1011-AT 10,221	c		
SS 1033-AT 10,223			
SS-1034-AT 10,224	c		
SS 1002-AT 10,225	c		
SS 1005-AT 10,226	b,c		b
SS 1012-AT 10,256	c		

[1] Growth is average Ash-Free-Dry-Weight (AFDW) of surviving organisms
[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms
[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 17. (page 1 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	28-Day Survival	28-Day Growth[1]	28-Day Biomass[2]
SS 1022-AT 10,207		b,c	b,c
SS 1024-AT 10,208		c	c
SS 1032-AT 10,209		c	c
SS 1021-AT 10,210		b,c	b,c
SS 1026-AT 10,212			
SS 1028-AT 10,213	c		
SS 1025-AT 10,214			c
SS 1010-AT 10,215		b,c	b,c
SS 1029-AT 10,216			
SS 1001-AT 10,217		c	c
SS 1042-AT 10,218	b,c		

[1] Growth is average dry weight of surviving organisms
[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 17. (page 2 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	28-Day Survival	28-Day Growth[1]	28-Day Biomass[2]
SS 1009-AT 10,219			c
SS1017-AT 10,220		c	c
SS 1011-AT 10,221	c	c	c
SS 1033-AT 10,223			
SS-1034-AT 10,224			
SS 1002-AT 10,225			
SS 1005-AT 10,226		c	c
SS 1012-AT 10,256		b,c	b,c

[1] Growth is average dry weight of surviving organisms
[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 18. **Sediment Chemistry Results: Percent Moisture, Total Organic Carbon, and Grain Size for the Stantec, St. Louis River, 40 th Avenue Project, Duluth Minnesota.**

Analyte	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT
Percent Moisture (%)	54.7	51.2	49.1	46.2	60.7	52.7	70.9	55.3	30.5	55.8	34.4
Total Organic Carbon (mg/kg)	100,000	31,700	37,700	44,100	102,000	134,000	92,900	45,700	38,000	52,700	30,200
Grain Size											
Percent Clay (%)	20.0	20.0	12.5	12.5	12.5	7.5	22.5	20.0	5.0	20.0	7.5
Percent Sand (%)	25.0	20.0	47.5	45.0	37.5	72.5	17.5	22.5	80.0	27.5	75.0
Percent Silt (%)	55.0	60.0	40.0	42.5	50.0	20.0	60.0	57.5	15.0	52.5	17.5
Texture	silt loam	silt loam	loam	loam	silt loam	sandy loam	silt loam	silt loam	loamy sand	silt loam	sandy loam

Table 18. (continued) **Sediment Chemistry Results: Percent Moisture, Total Organic Carbon, and Grain Size for the Stantec, St. Louis River, 40 th Avenue Project, Duluth Minnesota.**

Analyte	SS 1009-AT	SS 1017-AT	SS 1011-AT	SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	SS 1041-AT	SS 1012-AT
Percent Moisture (%)	50.8	55.0	51.2	57.1	71.6	70.8	66.3	56.4	25.0	41.8
Total Organic Carbon (mg/kg)	60,400	82,900	46,500	40,300	95,000	55,300	75,400	97,700	2,710	35,500
Grain Size										
Percent Clay (%)	15.0	17.5	17.5	22.5	27.5	32.5	27.5	20.0	2.5	12.5
Percent Sand (%)	52.5	30.0	60.0	22.5	10.0	10.0	15.0	22.5	92.5	57.5
Percent Silt (%)	32.5	52.5	22.5	55.0	62.5	57.5	57.5	57.5	5.0	30.0
Texture	sandy loam	silt loam	sandy loam	silt loam	silty clay loam	silty clay loam	silty clay loam	silt loam	sand	sandy loam

Table 19.
(page 1 of 2)

Macroinvertebrate Indices for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.

Index	SS 1029-BCA	SS 1001-BCA	SS 1002-BCA	SS 1031-BCA	SS 1032-BCA	SS 1021-BCA	SS 1042-BCA	SS 1028-BCA	SS 1010-BCA	SS 1025-BCA	SS 1026-BCA
Abundance	115	40	37	17	9	18	97	61	35	58	59
Taxa Richness	21	12	9	6	12	10	17	13	9	16	17
Shannon-Weaver Diversity Index	2.343	2.144	1.876	1.646	2.351	2.058	2.425	2.101	1.803	2.096	2.415
Simpson Diversity Index	6.206	5.926	5.205	4.738	9.000	6.231	8.769	5.751	4.268	4.861	7.718
Hilsenhoff Biotic Index	5.586	5.853	3.914	6.747	5.367	5.839	5.478	6.639	6.163	6.672	6.402
Scrapers/Filterers	0.2	0	0	0	2.0	0	0.05	0.06	0	0	0
Shredders/Total	0	0	0	0	0	0	0	0	0	0	0
Dominant-Taxon Percent Composition	34.78%	35.00%	32.43%	29.41%	44.44%	27.78%	21.65%	32.79%	42.86%	39.66%	28.81%
EPT Index	0.615	0.095	0.556	0.000	0.125	0.500	0.128	0.182	0.261	0.026	0.064

Table 19.
(page 2 of 2)

Macroinvertebrate Indices for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.

Index	SS 1033-BCA	SS 1034-BCA	SS 1022-BCA	SS 1024-BCA	SS 1041-BCA	SS 1012-BCA	SS 1017-BCA	SS 1011-BCA	SS 1009-BCA	SS 1005-BCA
Abundance	21	17	10	2	8	11	8	8	19	9
Taxa Richness	5	4	6	2	3	4	5	3	10	6
Shannon-Weaver Diversity Index	1.204	1.236	1.748	0.693	0.974	1.241	1.560	0.900	2.160	1.677
Simpson Diversity Index	2.579	3.108	5.556	2.000	2.462	3.103	4.571	2.133	7.681	4.765
Hilsenhoff Biotic Index	6.948	7.082	5.240	6.600	5.963	6.473	6.825	5.875	5.568	4.900
Scrapers/Filterers	0	0	0	0	0	0	0	0	0.25	0
Shredders/Total	0	0	0	0	0	0	0	0	0	0
Dominant-Taxon Percent Composition	57.14%	41.18%	20.00%	50.00%	50.00%	45.45%	25.00%	62.50%	21.05%	33.33%
EPT Index	0.059	0.000	0.400	0.000	1.000	0.375	0.333	0.333	0.273	1.000

February 17, 2015

Great Lakes Environmental Center

Applied Environmental Sciences
www.glec.com

Traverse City Operations
739 Hastings St.
Traverse City
MI 49686

231 941-2230
231 941-2240 fax

Columbus Operations
1295 King Ave.
Columbus
OH 43212

614 487-1040
614 487-1920 fax

David Constant, P.G.
LEEDAP
Stantec
Engineers, Inc.
6188 Rome Circle NW
Rochester, MN 55901

Edward G. Lilla, PE,

Jewell Associates

560 Sunrise Drive
Spring Green, WI 53588

RE: **FINAL REPORT: Results for the 10-day *Chironomus dilutus*, 28-day *Hyalella azteca*, and 28-day *Lumbriculus variegatus* Whole Sediment Toxicity Testing and Macroinvertebrate Taxonomy Results Stantec; St. Louis River 40th Avenue Project Project Number: 2290**

Dear Mr. Constant:

Great Lakes Environmental Center, Inc. (GLEC) has completed our analysis of twenty-one sediment samples that were collected by Stantec personnel on September 15th, 16th, 17th, 18th, and 19th, 2014 for the St. Louis River 40th Avenue Project in Duluth, Minnesota. Our analysis included macroinvertebrate taxonomy and the following whole sediment toxicity tests: *Chironomus dilutus* (*C. dilutus)* 10-day growth and survival, *Hyalella azteca* (*H. azteca*) 28-day growth and survival, and *Lumbriculus variegatus* (*L. variegatus)* 28-day bioaccumulation tests which included the 4-day acute toxicity screening tests.

During the whole sediment toxicity tests with *C. dilutus* and *H. azteca*, the organisms were exposed to whole sediment sample and the effects on survival and growth were measured. The *L. variegatus* 28-day bioaccumulation analysis included the exposure of *L. variegatus* to whole sediment samples and the measurement of lipid, percent moisture, metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenol arochlors (PCB Arochlors) and Dioxin Furan compounds in tissue samples. Total organic Carbon, percent moisture, and grain size was also analyzed in the whole sediment samples (Appendix I).

The macroinvertebrate taxonomy consisted of the sorting and identification of macroinvertebrates from surface grab sediment samples and the calculation of common metrics. The macroinvertebtrate analysis and the whole sediment toxicity tests were completed at GLEC's laboratory in Traverse City, Michigan. Sediment and tissue chemistry analysis was completed by Pace Analytical Laboratories in Green Bay, Wisconsin.

Whole Sediment Toxicity

The sample identification numbers, survival, and growth test results for the whole sediment toxicity assessments for the twenty-one sediment samples and laboratory controls are summarized and provided in the following tables:

- Table 1: 10-Day *C. dilutus* Average Percent Survival
- Table 2: 10-Day *C. dilutus* Average Growth and Biomass Estimates (expressed as average ash-free-dry-weight (AFDW))
- Table 3: 28-Day *H. azteca* Average Percent Survival
- Table 4: 28-Day *H. azteca* Average Growth and Biomass Estimates
- Table 5: 4-Day *L. variegatus* Average Percent Survival
- Tables 6a, 6b, and 6c: 28-Day *L. variegatus* Average Depurated Wet Weight
- Table 7: 28-Day *L. variegatus* Tissue Analyte Results: Percent Lipids, Percent Moisture, and PAHs
- Table 8: 28-Day *L. variegatus* Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture, and PCB Arochlors
- Table 9: 28-Day *L. variegatus* Tissue Analyte Results: Dioxin and Furan

Water quality data for the overlying water for each sediment sample tested are summarized in Tables 10 through 15 for the *C. dilutus*, *H. azteca*, 4-day *L. variegatus*, and 28-day *L. variegatus* tests, respectively. Summaries of the statistically significant differences (p=0.05) between each of the two reference sediment samples; SS-1031-AT (GLC Number 10,222) and SS-1041-AT (GLC Number 10,254) and the nineteen site investigative sediment samples are provided in Table 16 for the *C. dilutu*s tests and in Table 17 for the *H. azteca* tests.

Sediment percent moisture, Total Organic Carbon (TOC), and grain size results of the twenty-one sediment samples are provided in Table 18.

A detailed summary of the overlying water quality measurements are provided in Appendices B1 (*C. dilutus*), B2 (*H. azteca*), B3 (4- day *L. variegatus)*, B4 (28-day *L. variegatus* conducted October 8-November 5, 2014*)*, B5 (28-day *L. variegatus* conducted October 22-November 19, 2014*)*, and B6 (28-day *L. variegatus* conducted November 12-December 10, 2014*)*.

The survival, growth, and statistical data sheets and summaries for the *C. dilutus* and *H. azteca* tests are shown in Appendices C1 through C3, and D1 through D3, respectively. The laboratory data sheets and statistical data sheets for the 4-day percent survival are provided in

Appendix E and 28-day depurated wet weights of the *L. variegatus* are provided in Appendices F1 through F3.

The analytical chemistry data for the 28-day *L. variegatus* whole sediment bioaccumulation tests are provided on the enclosed compact diskettes and summarized in Tables 7a through 7c, 8a through 8c, and 9a through 9c (Appendix F4).

The daily laboratory bench data sheets are kept on file at GLEC and are also provided on the enclosed compact diskettes. Chain of Custody forms and reference toxicant data are provided in Appendices A and G, respectively.

Macroinvertebrate Taxonomy

Macroinvertebrate Indices results for the twenty-one macroinvertebrate samples are shown in Table 19. Chain of Custody forms and sample identification numbers for the macroinvertebrate samples are provided in Appendix H.

METHODS

The whole sediment toxicity tests were conducted at our Traverse City, Michigan laboratory following GLEC's written Standard Operating Procedures (SOPs) which are based on the procedures outlined in U.S. EPA Method, EPA/600/R-99/064 *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates*, Second Edition and American Society for Testing and Materials (ASTM) 1706-05, *Standard Test Methods for Measuring the Toxicity of Sediment Associated Contaminants with Freshwater Invertebrates* (ASTM 2010).

The twenty-one sediment samples were collected by Stantec and delivered via courier to GLEC. The sediment samples were received at GLEC, where they were assigned a unique GLEC laboratory identification number and stored at 0≤6°C, but not frozen, until test initiation (see table below).

Sample I.D.	Sample Description	GLEC Lab. ID Number	Date Sampled	Date Received
SS-1031-AT	Reference Sample	10,222	September 18, 2014	September 19, 2014
SS-1041-AT	Reference Sample	10,254	September 19, 2014	September 23, 2014
SS-1022-AT	Site Sample	10,207	September 16, 2014	September 17, 2014
SS-1024-AT	Site Sample	10,208	September 16, 2014	September 17, 2014
SS-1032-AT	Site Sample	10,209	September 15, 2014	September 17, 2014
SS-1021-AT	Site Sample	10,210	September 15, 2014	September 17, 2014

Sample I.D.	Sample Description	GLEC Lab. ID Number	Date Sampled	Date Received
SS-1026-AT	Site Sample	10,212	September 16, 2014	September 18, 2014
SS-1028-AT	Site Sample	10,213	September 16, 2014	September 18, 2014
SS-1025-AT	Site Sample	10,214	September 16, 2014	September 18, 2014
SS-1010-AT	Site Sample	10,215	September 17, 2014	September 18, 2014
SS-1029-AT	Site Sample	10,216	September 17, 2014	September 18, 2014
SS-1001-AT	Site Sample	10,217	September 17, 2014	September 18, 2014
SS-1042-AT	Site Sample	10,218	September 17, 2014	September 18, 2014
SS-1009-AT	Site Sample	10,219	September 18, 2014	September 19, 2014
SS-1017-AT	Site Sample	10,220	September 18, 2014	September 19, 2014
SS-1011-AT	Site Sample	10,221	September 18, 2014	September 19, 2014
SS-1033-AT	Site Sample	10,223	September 18, 2014	September 19, 2014
SS-1034-AT	Site Sample	10,224	September 18, 2014	September 19, 2014
SS-1002-AT	Site Sample	10,225	September 18, 2014	September 19, 2014
SS-1005-AT	Site Sample	10,226	September 18, 2014	September 19, 2014
SS-1012-AT	Site Sample	10,256	September 19, 2014	September 23, 2014

The 10-day *C. dilutus* toxicity tests and the 28-day *H. azteca* toxicity tests were initiated on November 04, 2014 for each of the twenty-one sediment samples, one GLEC laboratory control sediment and one water only exposure, per test organism.

On October 03, 2014, the twenty-one investigative sediment samples and a laboratory control sediment were used to initiate 4-day *L. variegatus* sediment toxicity screening tests. There was no statistically significant reduction ($p \geq 0.05$) in *L. variegatus* survival after 4-days of exposure in the twenty-one investigative samples when compared to the laboratory control sediment (Table 5). Consequently, the 28-day *L. variegatus* bioaccumulation tests were initiated with the twenty-one investigative sediments and one laboratory control sediment. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were initiated on three different days; October 08, October 22, and November 12, 2014.

10-DAY *CHIRONOMUS DILUTUS* AND 28-DAY *HYALELLA AZTECA* WHOLE SEDIMENT TOXICITY TESTS

Summary of Test Procedures: 10-Day *Chironomus dilutus* and 28-Day *Hyalella azteca*

Second to third instar *C. dilutus* (10-11 days old at test initiation; provided by an outside supplier: Aquatic Bio Systems) was used to initiate the 10-day whole sediment toxicity tests and water only exposures. Juvenile *H. azteca* (7-8 days old; cultured in house) were used to

initiate the 28-day whole sediment toxicity tests and water only exposure. All organisms were randomly placed in test chambers using a large bore pipette. The *C. dilutus* and *H. azteca* were continuously exposed for the duration of the test (10-day and 28-day, respectively) to each of the sediment samples, one laboratory control sediment and one water only exposure.

In the water only exposures, test organisms were exposed to the overlying water with no sediment. There were eight replicate beakers for each sediment sample, the water only exposure, and the GLEC laboratory control sediment; each replicate contained 10 test organisms. The GLEC laboratory control sediment is a reference sediment that is collected from the Boardman River, a local river that has a primarily forested watershed in the Pere Marquette State Forest.

The *C. dilutus* and *H. azteca* were exposed in 470 mL glass test chambers, each containing 100 mL of whole sediment and 175 mL of overlying water.

Prior to adding the whole sediment to each test chamber, the laboratory control sediment as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all purpose mixer or spoon until a uniform color and texture was achieved.

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was immediately added; and was considered to be test day -1, the test day prior to day 0 (November 03, 2014 for the *C. dilutus* tests and for the *H. azteca* tests). Test organisms were randomly added to each replicate test chamber the following day (test day 0), November 04, 2014.

Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample, the laboratory control sediment, and the water only exposure consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 mg/L and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use.

The *C. dilutus* test chambers were fed 1.5 mL of Tetrafin® goldfish food slurry (4 mg/mL dry solids) once daily. The *H. azteca* test chambers were fed 1.0 mL mixture of yeast, trout food, and cerophyl (YTC; ~1800 (1700-1900 +/- 5%) mg/L solids) once daily.

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and the dissolved oxygen (DO) concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets.

If the DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO increased to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended unless the DO values dropped back below 2.5 mg/L, at which time the additional water renewals were re-initiated. There were no instances in the whole sediment toxicity tests of decreased DO and increased overlying water renewals.

Alkalinity, hardness, pH, conductance, and total ammonia (as N) were measured in the overlying water on test days 0 and 10 the *C. dilutus* (Table 10 and Appendix B1) and on days 0 and 28 for the *H. azteca* tests (Table 11 and Appendix B2) tests. For the 28-day *H. azteca* whole sediment toxicity tests, conductivity was measured weekly, and pH was measured at least three times per week from two randomly selected test chambers. The alkalinity, hardness, and total ammonia (as N) samples were a composite sample collected from all replicates of a given treatment. All test exposure water quality measurements were recorded on the laboratory bench data sheets (see enclosed compact disc).

Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber and recorded on the laboratory bench data sheets.

The number of *C. dilutus* surviving in each replicate test chamber was recorded at test termination (10 days), and a summary of the percent survival at test termination is provided in Tables 1 and 2. The average ash free dry weight [AFDW in milligrams (mg)] of the surviving organisms for each *C. dilutus* replicate, and the biomass [AFDW (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination, and the results are summarized in Table 2.

The number of surviving *H. azteca* in each replicate chamber was recorded at test termination (28 days) and the survival data are summarized in Tables 3 and 4. The average dry weight [in milligrams (mg)] of the surviving organisms for each *H. azteca* replicate, and the biomass [dry weight (mg) of the surviving organisms divided by the initial number of organisms] was also determined at test termination, and the data are summarized in Table 4.

A statistical procedure, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in U.S. EPA Method 600/R-99/064 and ASTM Method 1706-95B (2000), was used to compare the 10-day *C. dilutus* and the 28-Day *H. azteca* survival and growth data from the nineteen site investigative sediment samples to survival and growth data from two reference site sediment samples. Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then

tested using either the homoscedastic or heteroscedastic t-tests, which are used for comparing a single treatment to a single control.

The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Growth data were initially evaluated for normal distribution and homogeneity of variances. In those cases where the data were not normally distributed or homogenous, the data were analyzed using either the heteroscedastic t-test or the nonparametric test. In addition to growth being evaluated as average dry weight of the surviving organisms, growth was also analyzed as biomass (average dry weight of surviving organisms divided by the number of initial organisms).

The survival and growth for each investigative sample was considered statistically different when significantly lower ($p < 0.05$) than observed in the reference sediment.

C. dilutus (survival and growth endpoints) and *H. azteca* (survival endpoint) were compared statistically to the following two reference sites:

1. Site Reference Sample: SS-1031-AT (GLC Number 10,222); and

2. Site Reference Sample: SS-1041-AT (GLC Number 10,254).

Organisms exposed to the GLEC laboratory control sediment and the "water only" exposure achieved acceptable survival and growth, as specified in the U.S. EPA /600/R-99/064. In this instance, GLEC's laboratory control sediment and water only exposure results were used to confirm test acceptability and the health of the test organisms.

RESULTS

10-Day *Chironomus dilutus* and 28-Day *Hyalella azteca* Whole Sediment Toxicity Tests

10-Day *Chironomus dilutus*

The organisms exposed to the laboratory control sediment and to the water only exposure exceeded the minimum survival (70 percent) and growth (0.48 mg AFDW at test termination) criteria for acceptable controls for the *C. dilutus* tests (Tables 1 and 2). The acceptability requirements for survival and growth for the *C. dilutus* test can be found in U.S. EPA Method 600/R-99/064, Table 12.1. There was 100 percent survival in the laboratory control.

The overlying water quality measurements (Table 10) were also within the acceptable limits following the U.S. EPA testing protocol. Daily mean temperatures were 23°C ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water; and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of ten days varied between 0.10 mg/L and 2.68 mg/L in the overlying water among all sediment types. Consequently, the *C. dilutus* whole sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment toxicity.

All test chambers were observed daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples.

Statistical Analysis for 10-Day *Chironomus dilutus* Tests

Site Reference Sample SS-1031-AT Compared to Investigative Sediment Samples

C. dilutus survival and growth results (Appendix C1) from the site reference sample SS-1031-AT (GLC Number: 10,222) were compared statistically to the nineteen investigative sediment samples. After 10 days of exposure when compared to the sediment sample SS-1031-AT, *C. dilutus* survival was significantly reduced ($p<0.05$) in two investigative sediment samples; SS-1001-AT and SS-1005-AT (see Tables 1, 2, and 16, and Appendix C2).

When compared to the site reference sample SS-1031-AT (see Tables 2 and 16 and Appendix C2), *C. dilutus* growth measured as AFDW of surviving organisms (mg) was significantly; significantly reduced ($p< 0.05$) in two sediment samples;

- SS-1022-AT (GLC Number: 10,207); and
- SS-1032-AT (GLC Number: 10,209).

Additionally, when the investigative sediment samples were compared to the site reference sample SS-1031-AT (see Tables 2 and 16 and Appendix C2), *C. dilutus* growth expressed as biomass [AFDW of surviving organisms divided by the initial number of organisms (mg)] was significantly reduced ($p<0.05$) in three of the investigative site sediment samples, including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1032-AT (GLC Number: 10,209); and
- SS-1005-AT (GLC Number: 10,226).

Site Reference Sample SS-1041-AT Compared to Investigative Sediment Samples

C. dilutus survival and growth results (Appendix C1) from the site reference sample SS-1041-AT (GLC Number: 10,254) were compared statistically to the nineteen investigative sediment samples. After 10 days of exposure when compared to the sediment sample SS-1041-AT, *C. dilutus* survival was significantly reduced ($p<0.05$) in nine investigative sediment samples; including (see Tables 1, 2, and 16 and Appendix C3):

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1011-AT (GLC Number: 10,221);
- SS-1034-AT (GLC Number: 10,224);
- SS-1002-AT (GLC Number: 10,225);
- SS-1005-AT (GLC Number: 10,226) ; and
- SS-1012-AT (GLC Number: 10,256).

Growth measured as AFDW of surviving organisms (mg) was not significantly ($p\geq 0.05$) reduced in any of nineteen investigative site sediment samples after 10 days of exposure when compared to the site reference sediment SS-1041-AT (see Tables 2 and 16, and Appendix C3).

C. dilutus growth expressed as biomass was significantly reduced ($p<0.05$) in the investigative site sediment sample; SS 1022-AT (GLC Number: 10,207) after 10 days of exposure when compared to the site reference sediment SS-1041-AT (see Tables 2 and 16, and Appendix C3)

Outputs for the survival and growth statistical analyses for the *C. dilutus* whole sediment toxicity tests are provided in Appendices C1, C2, and C3.

28-Day *Hyalella Azteca*

The *H. azteca* test organisms exposed to the GLEC laboratory control sediment and to the water only exposure exceeded the minimum survival criteria (80%), and displayed acceptable measurable growth (Tables 3 and 4). The requirements for acceptable survival and growth for the *H. azteca* can be found in U.S. EPA /600/R-99/064, Table 14.3. There was 98.8 percent survival in the laboratory control.

The overlying water quality measurements (Table 11) were also within the acceptable limits following the U.S. EPA testing protocol. Daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water, and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of twenty-eight days varied between 0.06 mg/L and 2.68 mg/L in the overlying water among all sediment types.

All test chambers were checked daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples. The *H. azteca* whole sediment toxicity tests are valid assessments of sediment toxicity.

Statistical Analysis for 28-Day *Hyalella azteca* Tests

Site Reference Sample SS-1031-AT Compared to Investigative Sediment Samples

Survival and growth results (Appendix D1) from the site reference sediment sample SS-1031-AT (GLC Number: 10,222) were compared statistically to the nineteen investigative sediment samples. After 28 days of exposure when compared to reference sediment sample SS-1031-AT (see Tables 3, 4, and 17 and Appendix D2) *H. azteca* survival was significantly reduced ($p < 0.05$) in one sediment sample SS-1042-AT (GLC Number: 10,218).

After 28 days of exposure there was statistical significant reductions ($p < 0.05$) in the following four investigative site sediment samples for *H. azteca* growth (expressed as average dry weight) of the surviving organisms and as biomass when compared to site reference sediment sample SS-1031-AT (see Table 4 and Appendices D1):

- SS-1022-AT (GLC Number: 10,207);
- SS-1021-AT (GLC Number: 10,210);
- SS-1010-AT (GLC Number: 10,215); and
- SS-1012-AT (GLC Number: 10,256).

Site Reference Sample SS-1041-AT Compared to Investigative Sediment Samples

Survival and growth results (Appendix D1) from the reference sediment sample SS-1041-AT (GLC Number: 10, 254) were compared statistically to the nineteen investigative site sediment samples. When compared to the SS-1041-AT reference sediment sample (see Tables 3, 4, and 17 and Appendix D3), *H. azteca* survival was significantly reduced ($p < 0.05$) in three sediment samples;

- SS-1028-AT (GLC Number: 10,213);
- SS-1042-AT (GLC Number: 10,218); and
- SS-1011-AT (GLC Number: 10,221).

When compared to the reference sediment sample SS-1041-AT (see Tables 4, and 17 and Appendix D3), *H. azteca* growth (expressed as average dry weight) of the surviving organisms was significantly reduced ($p < 0.05$) in ten investigative sediment samples, including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1032-AT (GLC Number: 10,209);
- SS-1021-AT (GLC Number: 10,210);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1017-AT (GLC Number: 10,220);
- SS-1011-AT (GLC Number: 10,221);
- SS-1005-AT (GLC Number: 10,226); and
- SS-1012-AT (GLC Number: 10,256).

H. azteca growth (measured as biomass) when compared to the reference sediment sample SS-1041-AT (see Tables 4 and 17 and Appendix D3), was significantly reduced ($p<0.05$) in twelve investigative site sediment samples including:

- SS-1022-AT (GLC Number: 10,207);
- SS-1024-AT (GLC Number: 10,208);
- SS-1032-AT (GLC Number: 10,209);
- SS-1021-AT (GLC Number: 10,210);
- SS-1025-AT (GLC Number: 10,214);
- SS-1010-AT (GLC Number: 10,215);
- SS-1001-AT (GLC Number: 10,217);
- SS-1009-AT (GLC Number: 10,219);
- SS-1017-AT (GLC Number: 10,220);

- SS-1011-AT (GLC Number: 10,221);
- SS-1005-AT (GLC Number: 10,226); and
- SS-1012-AT (GLC Number: 10,256).

Outputs for the survival and growth statistical analyses for the *H. azteca* whole sediment toxicity tests are provided in Appendices D1, D2, and D3.

28-DAY *LUMBRICULUS VARIEGATUS* *WHOLE SEDIMENT BIOACCUMULATION TOXICITY TEST*

Summary of Test Procedures: 4-day *Lumbriculus variegatus* Acute Whole Sediment Toxicity Screening Test

Prior to conducting the 28-day bioaccumulation studies, 4-day *L. variegatus* acute toxicity screening tests were conducted. The 4-day *L. variegatus* acute toxicity screening tests were initiated with each of the twenty-one investigative sediment samples (as listed in the previous table) and one laboratory control sediment, on October 03, 2014.

Adult *L. variegatus* (purchased from California Blackworm Company) were used to initiate the 4-day whole sediment toxicity screening tests. *L. variegatus* were continuously exposed for 4-days to each of the twenty-one investigative sediment samples and to the laboratory control sediment.

Consistent with the EPA method, there were four replicate samples for each investigative sediment sample and the laboratory control sample; each *L. variegatus* replicate was initiated with 10 animals.

The *L. variegatus* were exposed in 470 mL glass test chambers, each containing 100 mL of whole sediment and 175 mL of overlying water.

Prior to adding the whole sediment to each test chamber, the laboratory control as well as each investigative sediment sample were thoroughly homogenized using a pre-cleaned stainless steel all purpose mixer or spoon until a uniform color and texture was achieved.

A subsample of the homogenized twenty-one investigative sediment samples was collected and shipped to Pace Analytical to be analyzed for the following characteristics; Percent Moisture, Total Organic Carbon (TOC), and grain size (see Table 18).

The homogenized sediment was then added to each test chamber using a pre-cleaned stainless steel spoon. After the addition of the sediment to the test chambers, the overlying water was

immediately added; this was considered to be test day -1 (October 02, 2014). Test organisms were randomly added to each replicate test chamber the following day (test day 0).

Overlying water was intermittently supplied to each test chamber at least twice daily (once every 12-hours) via a static-renewal water delivery system. The overlying water for each sediment sample and the laboratory control sediment consisted of de-chlorinated municipal (Traverse City, Michigan) tap (Lake Michigan sourced) water, with an average hardness of 129 mg/L and an average alkalinity of 100 mg/L. Temperature, dissolved oxygen, pH, and specific conductance of the overlying water was measured daily prior to use.

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod 16 hours light: eight hours dark; and light intensity of 100-1000 lux.

Temperature and the dissolved oxygen (DO) concentration of the overlying water in the test chambers were measured daily in two alternating replicates for each test sediment, and the results were recorded on the laboratory bench data sheets. If the DO dropped below 2.5 mg/L, the number of daily overlying water renewals was increased (up to 4 times per day) for all treatments until the DO recovered to greater than 3.0 mg/L. Once the DO had increased to above 3.0 mg/L, additional water renewals were suspended, until the DO values dropped below 2.5 mg/L, at which time the additional water renewals were re-initiated.

Alkalinity, hardness, pH, conductivity, and total ammonia (as N) were measured on test days 0 and 4, in the overlying water for the *L. variegatus* tests (Table 12 and Appendix B3).

Observations of organism behavior and anomalies observed within the sediment were made daily for each test chamber and recorded on the laboratory bench data sheets.

The number of *L. variegatus* surviving in each replicate test chamber was recorded at test termination (4 days), and a summary of the percent survival at test termination is provided in Table 5.

A statistical analysis, using the program TOXCALC (version 5.0.32) and following statistical guidelines provided in EPA Method 600/R-99/064 and ASTM (2000) Method 1706-95B, was used to compare the 4-day survival of the laboratory control to the investigative sediment samples. In this instance, the laboratory control was used for comparison with each of the twenty-one investigative sediments. Prior to analysis, all percent survival data were transformed using an arc sine-square root transformation. All transformed data were then tested using either the homoscedastic or heteroscedastic t-test, which are used for comparing a single treatment to a single control. The homoscedastic t-test assumes the data are normally distributed (Shapiro-Wilk Test or Kolmogorov D Test) and the variances are equal (F-test). If the variances are not equal, the data are analyzed using the heteroscedastic t-test. If the data

are not normally distributed, then the data are analyzed using a nonparametric t-test (e.g., Steel's Many-One Rank Test or Wilcoxon Rank Sum Test with Bonferroni's Adjustment).

Results: 4-Day *L. variegatus* Acute Whole Sediment Toxicity Screening Test

The organisms exposed to each laboratory control sediment exceeded 90 percent survival after 4-days of exposure.

GLEC laboratory controls for each toxicity test met the minimum survival requirements as specified in the EPA method and those requirements are acknowledged in the following results section for each set of toxicity tests. For the purpose of this study, the laboratory control sediment was used as a measure of test acceptably and the health of the test organisms.

The overlying water quality measurements (Table 12 and Appendix B3) were also within the acceptable limits following the U.S. EPA testing protocol (i.e., daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of 4 days varied between 0.07 mg/L and 2.40 mg/L in the overlying water among all sediment types). Consequently, the *L. variegatus* 4-day whole sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment screening toxicity.

All test chambers were observed daily to assess organism behavior and no unusual observations were noted with the test organisms in these sediment samples.

4-Day *L. variegatus* Statistical Results

L. variegatus 4-day survival results from the laboratory control sediment conducted October 03 through 07, 2014 were compared statistically to the twenty-one investigative sediment samples. *L. variegatus* survival was not significantly reduced ($p \geq 0.05$) in any of the twenty-one investigative sediment samples after 4-days of exposure when compared to the laboratory control sediment (see Table 5).

Outputs for the survival statistical analyses for the *L. variegatus* 4-day survival whole sediment toxicity tests are provided in Appendix E.

Summary of Test Procedures: 28-Day *L. variegatus* Whole Sediment Bioaccumulation Tests

Adult *L. variegatus* were continuously exposed for 28-days to the twenty-one investigative sediment samples. The twenty-one sediment samples were divided into three sets of seven sediment samples and each set of seven sediment samples were initiated on three different

days. On October 08, 2014 the following seven sediment samples and one laboratory control were initiated; SS-1022-AT, SS-1024AT, SS-1032-AT, SS-1021-AT, SS-1026-AT, SS-1028-AT, and SS-1025-AT. The second set of seven sediment samples; SS-1010-AT, SS-1029-AT, SS-1001-AT, SS-1042-AT, SS-1009-AT, SS-1017-AT, and SS-1011-AT, were initiated on October 22, 2014 with one laboratory control sediment. The remaining seven sediment samples were initiated on November 12, 2014 with one laboratory control sediment and the following sediment samples; SS-1031-AT, SS-1033-AT, SS-1034-AT, SS-1002-AT, SS-1005-AT, SS-1041-AT, and SS-1012-AT.

Adult *L. variegatus* were exposed in 3 liter (L) glass tanks, each containing 1L of whole sediment and 2 L of overlying water. Temperature-controlled overlying water was supplied to each test chamber via a continuous-renewal water delivery system at a rate of 5 mL/min (± 2 mL/min). All test chambers were aerated at approximately 100 bubbles per minute for the full duration of the test. The overlying water consisted of de-chlorinated municipal (Lake Michigan) water of moderate hardness (~140 mg/L). Consistent with the test procedure, there were five replicate tanks for each sediment sample, each initiated with 30 g of *L. variegatus* (as per study plan).

The test chambers were placed in a temperature controlled water bath under the specified conditions of 23 ± 1°C; photoperiod of 16 hours light and 8 hours dark; and ambient lighting. Water temperature and dissolved oxygen were monitored daily in two random replicates for each test sample. Alkalinity, hardness, pH, dissolved oxygen (D.O.), conductivity, temperature, and total ammonia were measured at Day 0 (test initiation) and on days 7, 14, 21, and 27 (Tables 13, 14, 15, and Appendix B4 through B6).

All test chambers were checked daily to assess organism behavior and no unusual observations were noted with the test organisms. Consequently, the *L. variegatus* whole sediment toxicity tests are valid assessments of sediment toxicity.

The overlying water quality measurements (Tables 13, 14, and 15) were also within the acceptable limits following the U.S. EPA testing protocol (i.e., daily mean temperatures were 23 ± 1 °C; dissolved oxygen (DO) was maintained above 2.5 mg/L in the overlying water and there were no variations greater than 50% in overlying water hardness or alkalinity measurements within each test type. Total ammonia over the duration of 28 days varied between 0.03 mg/L and 1.72 mg/L in the overlying water among all sediment types.). Consequently, the *L. variegatus* 28-day bioaccumulation sediment toxicity tests were conducted following the standard protocols and are valid assessments of sediment toxicity.

At test termination, the test organisms were recovered from each replicate chamber using reasonable effort until a minimum of 15 grams of *L. variegatus* per replicate or 70 grams of *L. variegatus* composited per sediment sample (requested per client) was recovered. The final total depurated wet weight (g) of surviving *L. variegatus* was also determined at test termination and is provided in Tables 6a, 6b, and 6c and Appendices F1 through F3.

After 28-29 days of exposure, the surviving *L. variegatus* were depurated for 24 hours in overlying water to purge all gut contents. Due to the quantity and physical characteristics of the sediment samples an inordinate amount of time was necessary to remove the organisms, Therefore, test termination for all twenty-one sediments ranged between 28 and 29 days.

After the 24-hour depuration period, the surviving *L. variegatus* were weighed, then frozen in glass jars (supplied by the analytical laboratory) and shipped to Pace Analytical for tissue analysis on the following analytes: percent lipids, percent moisture, PAHs, metals, PCB Archlors, and Dioxin/Furan (Tables 7, 8, and 9).

The analyte result data supplied by Pace Analytical is provided in Appendix F4 and electronically on the enclosed compact diskette.

Results: 28-Day *L. variegatus* Tissue Analysis

L. variegatus tissue that was harvested from the 28-day bioaccumulation toxicity tests were analyzed by Pace Laboratories, Inc. for the following parameters:

- **Percent Moisture:** Analytical Method; ASTM D2974-87
- **Polychlorinated Biphenyls (PCB Arochlors); EPA 8082A,** Analytical Method; 8082A GCS
    - PCB-1016 (Aroclor 1016)
    - PCB-1221 (Aroclor 1221)
    - PCB-1232 (Aroclor 1232)
    - PCB-1242 (Aroclor 1242)
    - PCB-1248 (Aroclor 1248)
    - PCB-1254 (Aroclor 1254)
    - PCB-1260 (Aroclor 1260)
    - PCB, Total
- **Metals, EPA 6020 (**6020 MET ICPMS)
    - Arsenic
    - Barium
    - Cadmium
    - Chromium
    - Copper
    - Lead
    - Mercury
    - Nickel
- **Polyaromatic Hydrocarbons (EPA 8270 by SIM)**
    - 1-Methylnaphthalene
    - 2-Methylnaphthalene

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

- **Lipid** (Pace Laboratory Method)

All analyses are reported on a wet weight basis. Quality Control data and reporting are provided with the raw analytical data in the attached diskette. No statistical analysis were performed with the *L. variegates* tissue analysis.

Total Organic Carbon, percent moisture and grain size were also analyzed in whole sediment samples (Table 18). Percent Sand, Silt, Clay was analyzed using Method ASA 15-5 (modified). Total organic Carbon in both tissue and sediment were analyzed using the Walkey Black Method.

MACROINVERTEBRATE TAXONOMY

GLEC completed macroinvertebrate taxonomy and analysis of twenty-one samples (Table 19). The macroinvertebrate samples were analyzed following the taxonomy protocols outlined in: *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish* - Second Edition; EPA 841-B-99-002 (Level 3 taxonomy).

A subsample of approximately 300 organisms were randomly sorted from each sample and identified to the lowest practical taxon (genus, species). If fewer than 300 organisms were present, the entire sample was sorted and counted. A standard suite of metrics were calculated from the macroinvertebrate dataset and results are provided Table 19. No statistical analysis was performed with the invertebrate data. The entire macroinvertebrate dataset and sample chain of custodies are provided in Appendix H.

SUMMARY

In summary, GLEC completed whole sediment toxicity testing and analysis of twenty-one sediment samples. Each whole sediment toxicity test was performed following acceptable methods, without exception, and is accurate and complete. Whole sediment toxicity test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC).

Statistical analyses were completed for the whole sediment toxicity tests with *C. dilutus* and *H. azteca*. All data are summarized in the following tables and raw data reported in the appendices to this report.

C. dilutus survival was significantly reduced in two sediment samples when compared to the reference sediment sample SS-1031-AT (Table 16). Survival, when compared to the reference sediment sample, SS-1041-AT was also significantly reduced in nine investigative site sediment samples (Table 16). *C. dilutus* growth, expressed as average Ash-Free-Dry-Weight or biomass was significantly reduced in two and three of investigative site sediment samples, when compared to reference sediment samples; SS-1031-AT and SS-1041-AT, respectively (Table 16).

H. azteca survival was significantly reduced in one of the investigative site sediment samples when compared to reference sediment sample SS-1031-AT (Table 17). Survival was significantly reduced in three investigative sediment samples when compared to the reference sediment sample SS-1041-AT. *H. azteca* growth (expressed either as average dry weight or biomass) was significantly reduced in four sediment samples, when compared to the reference sediment sample SS-1031-ATT (Table 17). However, when *H. azteca* growth was compared to the reference sediment sample SS-1041-AT, twelve investigative site sediment samples showed a significant reduction (Table 17).

No statistical comparisons were completed with the macroinvertebrate data nor the *L. variegatus* analytical tissue data. MacroInvertebrate taxonomy data are summarized in Table 19. *L. variegatus* analytical tissue data are summarized in Tables 7 through 9. Sediment chemistry results for percent moisture, total organic Carbon, and grain size are summarized in Table 18.

If you have any questions, or if you would like additional information, please contact either myself or Dennis McCauley at (231) 941-2230. Thank you for the opportunity to provide this service to Stantec. We look forward to continue providing environmental services to you in the future.

Sincerely,

Mailee W. Garton
Laboratory Coordinator

Dennis J. McCauley
President/Principal Research Scientist

MWG:mg

ACCREDITED IN ACCORDANCE WITH nelac

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis Harbor 40th Avenue Project, Duluth, Minnesota.**

(page 1 of 3)

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**Reference Sediment SS 1031-AT**	**Reference Sediment SS 1041-AT**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**
GLC#	**CS# 124**	**10,222**	**10,254**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**
1	10	10	10	7	9	9	9	10
2	10	10	8	9	9	10	8	9
3	10	10	10	9	9	10	10	10
4	10	7	10	6	7	9	10	10
5	10	8	9	9	10	10	8	10
6	10	10	10	10	9	10	9	10
7	10	9	10	7	8	9	10	10
8	10	10	10	10	9	10	8	10
10-Day Percent Survival	**100.0**	**92.5**	**96.3**	**83.8 [c]**	**87.5 [c]**	**96.3**	**90.0**	**98.8**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis Harbor 40th Avenue Project, Duluth, Minnesota.**

(page 2 of 3)

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1028-AT**	**SS 1025-AT**	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS1017-AT**
GLC#	**10,213**	**10,214**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**
1	10	10	8	10	8	8	7	10
2	10	10	8	9	5	10	9	10
3	9	9	8	10	8	8	6	10
4	8	9	8	10	7	8	10	8
5	9	10	10	9	9	10	10	9
6	8	8	8	10	7	10	7	9
7	10	9	8	10	8	10	10	10
8	10	10	10	9	7	10	10	10
10-Day Percent Survival	**92.5**	**93.8**	**85.0 [c]**	**96.3**	**73.8 [b.c]**	**92.5**	**86.3**	**95.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 1. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 3 of 3) ***Chironomus dilutus*** **10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]						
Replicate Number	**SS 1011-AT**	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1012-AT**	**Water Only**
GLC#	**10,221**	**10,223**	**10,224**	**10,225**	**10,226**	**10,256**	**Secondary Control**
1	10	10	10	9	8	9	10
2	6	9	8	10	9	7	9
3	9	9	8	10	8	8	8
4	8	10	8	10	7	5	10
5	10	7	9	8	7	9	10
6	9	9	9	7	9	8	10
7	8	9	9	8	7	10	9
8	9	10	10	8	8	10	8
10-Day Percent Survival	**86.3 [c]**	**91.3**	**88.8 [c]**	**87.5 [c]**	**78.8 [b,c]**	**82.5 [c]**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 1 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Control CS# 124		Reference Sediment SS 1031-AT 10,222		Reference Sediment SS 1041-AT 10,254		SS 1022-AT 10,207		SS 1024-AT 10,208		SS 1032-AT 10,209	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.41500	1.41500	1.07700	1.07700	0.72700	0.72700	0.81429	0.57000	0.90778	0.81700	0.76556	0.68900
2	1.42500	1.42500	0.79900	0.79900	0.93500	0.74800	0.87333	0.78600	0.91444	0.82300	0.67500	0.67500
3	1.15900	1.15900	0.92500	0.92500	0.72100	0.72100	0.75222	0.67700	0.96889	0.87200	0.81800	0.81800
4	1.29500	1.29500	1.11571	0.78100	0.77800	0.77800	0.79667	0.47800	1.10286	0.77200	0.86111	0.77500
5	1.38000	1.38000	0.86000	0.68800	0.90333	0.81300	0.86778	0.78100	0.89000	0.89000	0.91400	0.91400
6	1.21600	1.21600	0.89900	0.89900	0.67000	0.67000	0.69700	0.69700	0.83333	0.75000	0.71500	0.71500
7	1.34800	1.34800	0.82333	0.74100	0.81400	0.81400	0.82857	0.58000	0.94625	0.75700	0.58556	0.52700
8	1.38200	1.38200	0.88100	0.88100	0.92300	0.92300	0.74800	0.74800	1.02556	0.92300	0.74800	0.74800
Average[1] Ash-Free-Dry Weight (AFDW) (mg)	**1.32750**		**0.92251**		**0.80892**		**0.79723**[b]		**0.94864**		**0.76028**[b]	
Average Biomass[2] Weight (AFDW)		**1.32750**		**0.84887**		**0.77425**		**0.66463**[b,c]		**0.82550**		**0.73263**[b]
10-Day Percent Survival	**100.0**		**92.5**		**96.3**		**83.8**[c]		**87.5**[c]		**96.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 2 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1021-AT 10,210		SS 1026-AT 10,212		SS 1028-AT 10,213		SS 1025-AT 10,214		SS 1010-AT 10,215		SS 1029-AT 10,216	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.03000	0.92700	1.06200	1.06200	1.01500	1.01500	0.86600	0.86600	0.82875	0.66300	0.76800	0.76800
2	0.77250	0.61800	0.96778	0.87100	1.02400	1.02400	0.85800	0.85800	0.89500	0.71600	0.94111	0.84700
3	0.77900	0.77900	0.96400	0.96400	1.02444	0.92200	0.87889	0.79100	0.87750	0.70200	0.82000	0.82000
4	0.81000	0.81000	0.95000	0.95000	1.11125	0.88900	0.94778	0.85300	0.95875	0.76700	0.87800	0.87800
5	0.91750	0.73400	0.89800	0.89800	1.06111	0.95500	0.89200	0.89200	0.90400	0.90400	0.90667	0.81600
6	0.83111	0.74800	0.88600	0.88600	1.05625	0.84500	0.86250	0.69000	1.18875	0.95100	0.99900	0.99900
7	0.81300	0.81300	0.89200	0.89200	0.85100	0.85100	0.89222	0.80300	1.05875	0.84700	0.97300	0.97300
8	1.02250	0.81800	0.85500	0.85500	1.11100	1.11100	0.88700	0.88700	0.93200	0.93200	0.86444	0.77800
Average[1] Ash-Free-Dry Weight (AFDW) (mg)	**0.87195**		**0.93435**		**1.03176**		**0.88555**		**0.95544**		**0.89378**	
Average Biomass[2] Weight (AFDW)		**0.78088**		**0.92225**		**0.95150**		**0.83000**		**0.81025**		**0.85987**
10-Day Percent Survival	**90.0**		**98.8**		**92.5**		**93.8**		**85.0 [c]**		**96.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 3 of 4)

Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1001-AT 10,217		SS 1042-AT 10,218		SS 1009-AT 10,219		SS 1017-AT 10,220		SS 1011-AT 10,221		SS 1033-AT 10,223	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	1.12875	0.90300	1.45250	1.16200	1.35571	0.94900	0.98400	0.98400	0.82500	0.82500	0.90400	0.90400
2	1.64800	0.82400	0.96200	0.96200	0.99444	0.89500	0.90500	0.90500	0.96667	0.58000	0.97778	0.88000
3	0.90250	0.72200	0.99125	0.79300	1.06000	0.63600	1.03300	1.03300	0.87667	0.78900	1.01111	0.91000
4	0.94857	0.66400	0.98500	0.78800	1.06500	1.06500	1.03500	0.82800	1.07250	0.85800	0.90000	0.90000
5	0.85111	0.76600	0.92400	0.92400	0.82800	0.82800	0.97111	0.87400	0.92300	0.92300	1.26143	0.88300
6	0.89143	0.62400	1.15200	1.15200	1.33714	0.93600	0.98444	0.88600	0.85333	0.76800	0.99111	0.89200
7	0.96250	0.77000	0.97000	0.97000	1.01800	1.01800	0.79200	0.79200	0.86625	0.69300	0.99111	0.89200
8	1.17714	0.82400	1.07900	1.07900	0.96900	0.96900	1.04500	1.04500	0.84000	0.75600	1.06500	1.06500
Average[1] Ash-Free-Dry Weight (AFDW) (mg)	**1.06375**		**1.06447**		**1.07841**		**0.96869**		**0.90293**		**1.01269**	
Average Biomass[2] Weight (AFDW)		**0.76212**		**0.97875**		**0.91200**		**0.91837**		**0.77400**		**0.91575**
10-Day Percent Survival	**73.8 [b,c]**		**92.5**		**86.3**		**95.0**		**86.3 [c]**		**91.3**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 2 (page 4 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1034-AT 10,224		SS 1002-AT 10,225		SS 1005-AT 10,226		SS 1012-AT 10,256		Water Only Secondary Control	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.89500	0.89500	1.08222	0.97400	0.92875	0.74300	1.04556	0.94100	0.96400	0.96400
2	0.96125	0.76900	0.62800	0.62800	0.87000	0.78300	0.86571	0.60600	0.99000	0.89100
3	0.81500	0.65200	0.83000	0.83000	0.81750	0.65400	0.93625	0.74900	0.84750	0.67800
4	1.05250	0.84200	0.85600	0.85600	0.96286	0.67400	0.72200	0.36100	0.87600	0.87600
5	0.85111	0.76600	1.09125	0.87300	0.65143	0.45600	0.90556	0.81500	0.88200	0.88200
6	0.93111	0.83800	1.20429	0.84300	0.87444	0.78700	1.37625	1.10100	0.85500	0.85500
7	0.88000	0.79200	0.85625	0.68500	0.83857	0.58700	0.90100	0.90100	1.18000	1.06200
8	0.86500	0.86500	0.87500	0.70000	1.03875	0.83100	1.03300	1.03300	0.67375	0.53900
Average[1] Ash-Free-Dry Weight (AFDW) (mg)	**0.90637**		**0.92788**		**0.87279**		**0.97317**		**0.90853**	
Average Biomass[2] Weight (AFDW)		**0.80238**		**0.79863**		**0.68938[b]**		**0.81337**		**0.84337**
10-Day Percent Survival	**88.8[c]**		**87.5[c]**		**78.8[b,c]**		**82.5[c]**		**92.5**	

Note: Average Ash-Free-Dry Weight (AFDW) of *Chironomus dilutus* at test initiation = 0.14013 mg.

[1] Average Ash-Free-Dry-Weight (AFDW) is the total ash-free-dry weight of surviving organisms

[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 3. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 1 of 3) ***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**

Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**Reference Sediment SS 1031-AT**	**Reference Sediment SS 1041-AT**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**
GLC#	**CS# 124**	**10,222**	**10,254**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**
1	10	10	10	8	10	9	7	8
2	10	10	10	10	10	9	10	8
3	10	10	9	10	9	9	10	8
4	10	7	10	9	10	10	10	9
5	9	10	9	9	9	8	9	10
6	10	10	9	9	9	9	8	10
7	10	8	10	10	9	10	7	9
8	10	10	9	9	9	8	9	9
10-Day Percent Survival	**98.8**	**93.8**	**95.0**	**92.5**	**93.8**	**90.0**	**87.5**	**88.8**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 3.

(page 2 of 3)

Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1028-AT**	**SS 1025-AT**	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS 1017-AT**
GLC#	**10,213**	**10,214**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**
1	8	10	10	9	10	3	9	10
2	9	10	9	10	10	5	10	9
3	9	8	10	10	9	4	7	10
4	9	7	10	10	10	4	9	10
5	10	9	9	10	9	7	10	7
6	9	7	10	9	9	5	10	10
7	8	9	9	9	10	8	7	8
8	8	10	10	9	10	4	8	10
10-Day Percent Survival	**87.5**[c]	**87.5**	**96.3**	**95.0**	**96.3**	**50.0**[b,c]	**87.5**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 3. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**

(page 3 of 3) ***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]						
Replicate Number	**SS 1011-AT**	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1012-AT**	**Water Only**
GLC#	**10,221**	**10,223**	**10,224**	**10,225**	**10,226**	**10,256**	**Secondary Control**
1	9	10	9	9	10	10	8
2	7	8	10	10	8	9	9
3	8	7	10	10	8	9	10
4	10	10	8	9	8	9	9
5	10	9	10	8	10	9	8
6	8	10	10	9	9	10	10
7	8	10	10	10	10	10	9
8	7	10	9	10	9	10	9
10-Day Percent Survival	**83.8[c]**	**92.5**	**95.0**	**93.8**	**90.0**	**95.0**	**90.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 1 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	Control CS# 124		Reference Sediment SS 1031-AT 10,222		Reference Sediment SS 1041-AT 10,254		SS 1022-AT 10,207		SS 1024-AT 10,208		SS 1032-AT 10,209	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.39400	0.39400	0.14600	0.14600	0.20300	0.20300	0.11750	0.09400	0.16300	0.16300	0.10556	0.09500
2	0.45800	0.45800	0.14100	0.14100	0.16400	0.16400	0.13600	0.13600	0.16300	0.16300	0.14000	0.12600
3	0.38300	0.38300	0.14700	0.14700	0.16556	0.14900	0.10800	0.10800	0.14556	0.13100	0.14556	0.13100
4	0.45100	0.45100	0.17429	0.12200	0.20100	0.20100	0.10222	0.09200	0.12800	0.12800	0.21100	0.21100
5	0.46889	0.42200	0.18800	0.18800	0.14778	0.13300	0.12000	0.10800	0.16889	0.15200	0.17875	0.14300
6	0.33100	0.33100	0.15200	0.15200	0.25667	0.23100	0.09667	0.08700	0.13667	0.12300	0.15333	0.13800
7	0.40900	0.40900	0.18000	0.14400	0.18700	0.18700	0.11800	0.11800	0.17444	0.15700	0.13000	0.13000
8	0.33400	0.33400	0.15400	0.15400	0.20889	0.18800	0.13667	0.12300	0.20556	0.18500	0.16625	0.13300
Average[1] Dry Weight (mg)	**0.40361**		**0.16029**		**0.19174**		**[b,c] 0.11688**		**[c] 0.16064**		**[c] 0.15381**	
Average Biomass[2] Weight (mg)		**0.39775**		**0.14925**		**0.18200**		**[b,c] 0.10825**		**[c] 0.15025**		**[c] 0.13837**
10-Day Percent Survival	**98.8**		**93.8**		**95.0**		**92.5**		**93.8**		**90.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 2 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1021-AT 10,210		SS 1026-AT 10,212		SS 1028-AT 10,213		SS 1025-AT 10,214		SS 1010-AT 10,215		SS 1029-AT 10,216	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.12857	0.09000	0.20500	0.16400	0.19125	0.15300	0.15100	0.15100	0.11100	0.11100	0.19667	0.17700
2	0.09100	0.09100	0.19125	0.15300	0.18778	0.16900	0.15200	0.15200	0.14556	0.13100	0.19000	0.19000
3	0.11500	0.11500	0.15375	0.12300	0.18111	0.16300	0.18625	0.14900	0.11000	0.11000	0.15500	0.15500
4	0.12000	0.12000	0.16333	0.14700	0.22889	0.20600	0.16000	0.11200	0.11400	0.11400	0.14400	0.14400
5	0.13556	0.12200	0.23500	0.23500	0.28600	0.28600	0.16889	0.15200	0.17778	0.16000	0.18200	0.18200
6	0.16500	0.13200	0.15600	0.15600	0.25667	0.23100	0.14714	0.10300	0.14000	0.14000	0.18222	0.16400
7	0.10714	0.07500	0.21000	0.18900	0.12250	0.09800	0.21222	0.19100	0.11778	0.10600	0.19889	0.17900
8	0.17889	0.16100	0.21444	0.19300	0.11500	0.09200	0.15600	0.15600	0.13000	0.13000	0.21111	0.19000
Average[1] Dry Weight (mg)	[b,c] **0.13014**		**0.19110**		**0.19615**		**0.16669**		[b,c] **0.13076**		**0.18249**	
Average Biomass[2] Weight (mg)		[b,c] **0.11325**		**0.17000**		**0.17475**		[c] **0.14575**		[b,c] **0.12525**		**0.17263**
10-Day Percent Survival	**87.5**		**88.8**		**87.5** [c]		**87.5**		**96.3**		**95.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4 (page 3 of 4) **Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1001-AT 10,217		SS 1042-AT 10,218		SS 1009-AT 10,219		SS 1017-AT 10,220		SS 1011-AT 10,221		SS 1033-AT 10,223	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.17400	0.17400	0.45667	0.13700	0.19111	0.17200	0.16400	0.16400	0.17111	0.15400	0.16700	0.16700
2	0.14300	0.14300	0.36000	0.18000	0.10300	0.10300	0.15667	0.14100	0.11429	0.08000	0.14625	0.11700
3	0.12000	0.10800	0.50750	0.20300	0.15714	0.11000	0.13200	0.13200	0.17750	0.14200	0.19857	0.13900
4	0.15800	0.15800	0.43500	0.17400	0.16111	0.14500	0.10800	0.10800	0.14000	0.14000	0.18400	0.18400
5	0.18556	0.16700	0.20714	0.14500	0.19200	0.19200	0.16714	0.11700	0.14600	0.14600	0.16000	0.14400
6	0.17778	0.16000	0.37800	0.18900	0.12200	0.12200	0.16400	0.16400	0.09625	0.07700	0.17500	0.17500
7	0.13100	0.13100	0.22375	0.17900	0.18714	0.13100	0.19375	0.15500	0.17625	0.14100	0.18200	0.18200
8	0.16900	0.16900	0.71250	0.28500	0.18250	0.14600	0.17900	0.17900	0.23286	0.16300	0.18900	0.18900
Average[1] Dry Weight (mg)	**0.15729**[c]		**0.41007**		**0.16200**		**0.15807**[c]		**0.15678**[c]		**0.17523**	
Average Biomass[2] Weight (mg)		**0.15125**[c]		**0.18650**		**0.14013**[c]		**0.14500**[c]		**0.13037**[c]		**0.16212**
10-Day Percent Survival	**96.3**		**50.0**[b,c]		**87.5**		**92.5**		**83.8**[c]		**92.5**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 4
(page 4 of 4)

Comparison of Average[1] Dry Weight (mg), Biomass[2] (mg) and Percent Survival between the Site Reference Sediments; SS 1031-AT, SS 1041-AT and the Investigative Sediments Samples;
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

	SS 1034-AT 10,224		SS 1002-AT 10,225		SS 1005-AT 10,226		SS 1012-AT 10,256		Water Only Secondary Control	
Replicate Number	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**	**Average[1] Weight (mg)**	**Biomass[2] Weight (mg)**
1	0.29222	0.26300	0.18667	0.16800	0.15800	0.15800	0.16100	0.16100	0.26625	0.21300
2	0.24500	0.24500	0.19000	0.19000	0.15500	0.12400	0.13556	0.12200	0.19222	0.17300
3	0.17400	0.17400	0.15100	0.15100	0.18875	0.15100	0.12778	0.11500	0.30200	0.30200
4	0.26875	0.21500	0.18778	0.16900	0.15750	0.12600	0.12333	0.11100	0.24222	0.21800
5	0.22800	0.22800	0.14500	0.11600	0.11900	0.11900	0.13000	0.11700	0.13125	0.10500
6	0.20900	0.20900	0.19333	0.17400	0.12556	0.11300	0.11800	0.11800	0.28300	0.28300
7	0.20100	0.20100	0.24600	0.24600	0.13600	0.13600	0.13400	0.13400	0.36333	0.32700
8	0.28778	0.25900	0.17000	0.17000	0.20222	0.18200	0.16900	0.16900	0.15556	0.14000
Average[1] Dry Weight (mg)	**0.23822**		**0.18372**		**0.15525**[c]		**0.13733**[b,c]		**0.24198**	
Average Biomass[2] Weight (mg)		**0.22425**		**0.17300**		**0.13863**[c]		**0.13088**[b,c]		**0.22012**
28-Day Percent Survival	**95.0**		**93.8**		**90.0**		**95.0**		**90.0**	

Note: Average Dry Weight of *Hyallela azteca* at test initiation = 0.02175 mg.

[1] Average Dry Weight is the total dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different ($p < 0.05$) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different ($p < 0.05$) from site reference sediment SS 1041-AT (GLC Number: 10,254)

TABLE 5. **Comparison of Number of Surviving Organisms per Replicate[r] and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 1 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**Control**	**SS 1022-AT**	**SS 1024-AT**	**SS 1032-AT**	**SS 1021-AT**	**SS 1026-AT**	**SS 1028-AT**	**SS 1025-AT**
GLC#	**CS#123**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
1	9	10	10	9	10	10	10	9
2	9	10	10	10	9	9	9	9
3	10	10	10	10	10	9	8	10
4	10	10	9	10	10	10	9	10
4-Day Percent Survival	**95.0**	**100.0**	**97.5**	**97.5**	**97.5**	**95.0**	**90.0**	**95.0**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

TABLE 5. **Comparison of Number of Surviving Organisms per Replicater and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 2 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]							
Replicate Number	**SS 1010-AT**	**SS 1029-AT**	**SS 1001-AT**	**SS 1042-AT**	**SS 1009-AT**	**SS1017-AT**	**SS 1011-AT**	**SS 1031-AT**
GLC#	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**	**10,222**
1	10	10	8	10	8	10	8	10
2	8	10	10	10	9	10	10	10
3	10	10	10	10	9	9	10	9
4	10	10	10	9	10	10	10	10
10-Day Percent Survival	**95.0**	**100.0**	**95.0**	**97.5**	**90.0**	**97.5**	**95.0**	**97.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

TABLE 5. **Comparison of Number of Surviving Organisms per Replicater and Percent Survival between the Laboratory Control Sediment and the Investigative Sediments Samples;**

(page 3 of 3) ***Lumbriculus variegatus*** **4-Day Sediment Toxicity Screening Tests Conducted October 03-October 07, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

	Number Test Organisms Surviving per Replicate[r]					
Replicate Number	**SS 1033-AT**	**SS 1034-AT**	**SS 1002-AT**	**SS 1005-AT**	**SS 1041-AT**	**SS 1012-AT**
GLC#	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
1	10	10	10	10	10	10
2	9	7	10	9	10	8
3	10	10	10	9	10	10
4	10	10	10	10	10	9
10-Day Percent Survival	**97.5**	**92.5**	**100.0**	**95.0**	**100.0**	**92.5**

[r] Replicates initiated with 10 organisms each

[b] Significantly different ($p < 0.05$) from GLEC Laboratory Control

Table 6a. **Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

REPLICATE NUMBER	Laboratory Control LS# 124	SS 1022-AT GLC No. 10,207	SS 1024-AT GLC No. 10, 208	SS 1032-AT GLC No. 10, 209	SS 1021-AT GLC No. 10,210	SS 1026-AT GLC No. 10,212	SS 1028-AT GLC No. 10,213	SS 1025-AT GLC No. 10,214
1	23.19	24.67	23.30	25.53	14.93	18.12	19.63	19.63
2	25.12	30.73	22.38	23.52	19.61	21.19	19.95	19.95
3	21.65	31.20	23.20	18.30	17.62	17.88	18.11	18.11
4	23.68	25.19	24.75	17.03	16.96	23.52	17.44	17.44
5	23.69	24.83	23.97	21.23	15.09	18.49	20.12	20.12
Average Wet Depurated Weight (g)	**23.5**	**27.3**	**23.5**	**21.1**	**16.8**	**19.8**	**19.1**	**19.1**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

Table 6b. cont…….

Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

REPLICATE NUMBER	Laboratory Control LS# 123	SS 1010-AT GLC No. 10,215	SS 1029-AT GLC No. 10, 216	SS 1001-AT GLC No. 10, 217	SS 1042-AT GLC No. 10,218	SS 1009-AT GLC No. 10,219	SS 1017-AT GLC No. 10,220	SS 1011-AT GLC No. 10,221
1	27.71	18.09	18.34	20.33	19.69	16.74	20.61	20.61
2	25.14	19.16	19.98	21.27	18.08	16.67	23.37	23.37
3	19.23	23.71	20.84	22.29	19.20	17.85	17.39	17.39
4	22.67	18.63	20.06	19.12	20.28	22.27	17.60	17.60
5	21.36	19.50	17.89	17.90	21.19	22.18	20.42	20.42
Average Wet Depurated Weight (g)	**23.2**	**19.8**	**19.4**	**20.2**	**19.7**	**19.1**	**19.9**	**19.9**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

Table 6c. **Summary of Average Depurated Wet Weight (g) for the Laboratory Control and Investigative Sediment Samples;**
cont……. ***Lumbriculus variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

REPLICATE NUMBER	Laboratory Control LS# 123	SS 1010-AT GLC No. 10,222	SS 1029-AT GLC No. 10, 223	SS 1001-AT GLC No. 10, 224	SS 1042-AT GLC No. 10,225	SS 1009-AT GLC No. 10,226	SS 1017-AT GLC No. 10,254	SS 1011-AT GLC No. 10,256
1	27.71	18.09	18.34	20.33	19.69	16.74	20.61	20.61
2	25.14	19.16	19.98	21.27	18.08	16.67	23.37	23.37
3	19.23	23.71	20.84	22.29	19.20	17.85	17.39	17.39
4	22.67	18.63	20.06	19.12	20.28	22.27	17.60	17.60
5	21.36	19.50	17.89	17.90	21.19	22.18	20.42	20.42
Average Wet Depurated Weight (g)	**23.2**	**19.8**	**19.4**	**20.2**	**19.7**	**19.1**	**19.9**	**19.9**

Note: Initiated 28-day test with 30 grams of *L. variegatus* per replicate.

Table 7a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC #			**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
% Moisture	%	89.0	89.4	89.9	90.7	90.1	90.6	92.1	88.6	88.3
Acenaphthene	µg/Kg	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.75J	2.0J	<2.2
Acenaphthylene	µg/Kg	<1.2	<1.2	2.6J	2.2J	5.9	3.7	20.1	18.0	22.0
Anthracene	µg/Kg	<1.5	<1.5	6.7	7.9	14.4	8.7	39.1	53.1	39.5
Benzo(a)anthracene	µg/Kg	1.4J	1.1J	10.9	33.2	24.9	9.3	53.5	51.7	50.4
Benzo(a)pyrene	µg/Kg	21.2	29.4	36.9	45.9	76.1	47.6	70.5	82.5	52.2
Benzo(b)fluoranthene	µg/Kg	1.4J	1.9J	5.3	27.6	23.6	8.2	60.1	53.8	54.2
Benzo(g,h,i)perylene	µg/Kg	27.9	26.0	18.9	16.2	19.7	20.8	14.6	24.2	34.4
Benzo(k)fluoranthene	µg/Kg	1.6J	2.0J	7.4	39.6	40.2	13.2	64.8	77.9	60.0
Chrysene	µg/Kg	2.9J	2.3J	7.3	39.9	36.8	10.8	71.7	70.4	81.6
Dibenz(a,h)anthracene	µg/Kg	1.1J	1.1J	<0.90	<0.90	<0.90	<0.90	<0.90	4.6J	6.3J
Fluoranthene	µg/Kg	4.9	3.9	13.6	67.2	45.8	12.0	94.9	69.4	111
Fluorene	µg/Kg	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2.2J	3.5	<7.4
Indeno(1,2,3-cd)pyrene	µg/Kg	20.7	27.2	18.1	20.3	21.3	20.0	21.5	33.5	31.5
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	1.9J	<1.5	<1.5	2.5J	<1.5	<1.5	<6.0
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	2.7J	<1.4	1.8J	3.2J	<1.4	2.0J	<5.7
Naphthalene	µg/Kg	<0.76	0.89J	6.1	1.5J	2.1J	4.1	2.0J	3.0J	12.2J
Phenanthrene	µg/Kg	5.3	7.9	8.4	8.2	8.7	6.9	15.2	27.8	19.8
Pyrene	µg/Kg	4.5	3.1J	12.4	62.4	45.1	11.1	85.7	57.3	97.7

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 7b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC #			**CS# 124**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.2	<3.4	<0.55	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	6.0J	3.3J	8.0J	<7.6	5.4	8.4	7.0
Anthracene	µg/Kg	<1.5	<1.5	13.3	6.2	16.8	<9.3	9.4	18.1	13.3
Benzo(a)anthracene	µg/Kg	1.3J	0.91J	42.1	18.6	45.5	80.9	18.5	39.0	38.8
Benzo(a)pyrene	µg/Kg	19.6	16.1	56.4	54.2	40.4	45.3	40.8	57.4	65.2
Benzo(b)fluoranthene	µg/Kg	1.1J	1.2J	46.2	43.8	60.1	178	21.7	34.4	56.3
Benzo(g,h,i)perylene	µg/Kg	30.8	20.7	31.1	20.0	33.8	66.9	14.9	19.7	14.9
Benzo(k)fluoranthene	µg/Kg	1.2J	1.6J	54.0	32.9	59.8	122	29.8	46.0	58.7
Chrysene	µg/Kg	3.0J	1.5J	56.3	34.1	69.6	160	24.6	52.5	43.8
Dibenz(a,h)anthracene	µg/Kg	1.4J	<0.90	3.6J	1.7J	4.0J	10.6J	<0.90	1.8J	<0.90
Fluoranthene	µg/Kg	4.9	2.5J	84.1	39.2	108	216	30.0	76.9	60.5
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<7.4	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	27.1	18.2	14.0	27.7	17.2	48.2	21.8	19.6	20.3
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<6.0	<9.4	<1.5	<1.5	1.6J
2-Methylnaphthalene	µg/Kg	1.9J	<1.4	<2.8	<1.4	<5.7	<8.9	1.8J	1.8J	2.4J
Naphthalene	µg/Kg	<0.76	<0.76	4.0J	2.2J	5.6J	<4.8	4.4	4.1	6.0
Phenanthrene	µg/Kg	4.5	5.9	9.0	11.9	10.1J	29.8	5.7	9.3	9.5
Pyrene	µg/Kg	4.6	2.3J	84.4	36.5	99.7	237	30.1	68.6	64.7

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 7c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Percent Moisture and PAHs for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC#			**CS# 125**	**10,222**	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
Acenaphthene	µg/Kg	<0.55	<0.55	<1.1	<0.55	<2.8	<3.4	0.80J	<0.55	<0.55
Acenaphthylene	µg/Kg	<1.2	<1.2	3.8J	6.2	<6.0	8.3J	5.1	<1.2	<1.2
Anthracene	µg/Kg	<1.5	<1.5	10.9	13.1	21.1	28.2	10.2	2.2J	<1.5
Benzo(a)anthracene	µg/Kg	1.5J	0.78J	39.2	14.5	59.4	69.4	15.0	9.8	0.99J
Benzo(a)pyrene	µg/Kg	13.3	17.5	20.8	57.8	26.8	25.7	44.1	27.8	14.0
Benzo(b)fluoranthene	µg/Kg	1.6J	1.3J	40.9	14.3	64.8	107	7.8	12.3	0.63J
Benzo(g,h,i)perylene	µg/Kg	26.1	22.0	28.7	13.7	28.2	25.0	23.1	16.4	22.9
Benzo(k)fluoranthene	µg/Kg	1.3J	1.3J	44.4	22.9	68.9	64.1	10.8	16.2	<1.2
Chrysene	µg/Kg	2.8J	1.4J	53.5	22.4	100	119	12.4	13.4	1.2J
Dibenz(a,h)anthracene	µg/Kg	1.1J	<0.90	2.5J	<0.90	<4.5	5.9J	<0.90	<0.90	<0.90
Fluoranthene	µg/Kg	4.2	2.1J	76.1	32.4	158	198	23.3	16.4	2.4J
Fluorene	µg/Kg	<1.8	<1.8	<3.7	<1.8	<9.2	<11.5	<1.8	<1.8	<1.8
Indeno(1,2,3-cd)pyrene	µg/Kg	22.4	19.4	10.0	16.7	25.0	19.9J	20.2	19.7	16.0
1-Methylnaphthalene	µg/Kg	<1.5	<1.5	<3.0	<1.5	<7.5	<9.4	3.1J	1.9J	<1.5
2-Methylnaphthalene	µg/Kg	<1.4	<1.4	<2.8	<1.4	<7.1	<8.9	4.8	2.5J	<1.4
Naphthalene	µg/Kg	1.2J	1.0J	<1.5	1.1J	<3.8	<4.8	14.3	2.3J	<0.76
Phenanthrene	µg/Kg	4.9	3.3J	6.1J	6.9	17.6	15.8J	9.1	7.5	3.0J
Pyrene	µg/Kg	4.3	1.8J	73.8	29.9	162	190	23.0	17.3	2.6J

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC#			**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
% Lipid	%	2.6	1.9	1.3	1.1	1.4	1.4	1.1	1.8	2.1
Arsenic	mg/Kg	0.21	1.5	1.5	1.0	0.75	0.66	0.69	0.86	1.1
Barium	mg/Kg	11.5	15.2	22.6	15.8	21.5	33.0	29.7	49.5	33.3
Cadmium	mg/Kg	0.037J	0.030J	0.041J	0.033J	0.041J	0.034J	0.027J	0.043J	0.047J
Chromium	mg/Kg	0.061J	0.11	0.31	0.30	0.37	0.39	0.22	0.23	0.36
Copper	mg/Kg	2.0	7.6	9.4	7.1	8.1	8.6	6.8	12.4	12.6
Lead	mg/Kg	0.062J	0.13	0.50	0.24	0.46	0.42	0.26	0.27	0.48
Mercury	mg/Kg	<0.0076	0.0078J	<0.0075	0.0086J	0.0075J	<0.0070	<0.0074	<0.0069	0.0081J
Nickel	mg/Kg	0.065J	0.085J	0.25	0.28	0.29	0.28	0.17	0.19	0.30
% Moisture	%	89.0	89.4	89.9	90.7	90.1	90.6	92.1	88.6	88.3
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	20.2J	14.4J	31.6	19.3J	13.9J	16.6J	37.4
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	26.2	14.9J	55.4	31.6	28.0	27.0	73.9
PCB, Total	µg/Kg	<12.5	<12.5	46.4	29.3	87.0	50.9	41.9	43.7	111

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC#			**CS# 124**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**
% Lipid	%	2.7	1.2	1.4	1.2	1.3	1.7	0.87	1.2	0.97
Arsenic	mg/Kg	0.19	1.1	0.82	0.43	0.86	0.44	0.37	0.70	0.62
Barium	mg/Kg	9.6	10.7	16.5	13.1	15.2	15.2	13.1	17.5	16.0
Cadmium	mg/Kg	0.032J	0.021J	0.031J	0.043J	0.026J	0.062J	0.020J	0.027J	0.029J
Chromium	mg/Kg	0.067J	0.13	0.29	0.46	0.29	0.59	0.18	0.49	0.26
Copper	mg/Kg	1.1	3.6	5.2	4.7	4.5	4.9	3.4	4.6	3.5
Lead	mg/Kg	0.061J	0.087J	0.26	0.34	0.26	0.51	0.36	0.47	0.49
Mercury	mg/Kg	<0.0075	<0.0074	<0.0075	<0.0074	<0.0070	<0.0072	<0.0073	<0.0067	<0.0070
Nickel	mg/Kg	0.066J	0.090J	0.25	0.28	0.22	0.35	0.19	0.33	0.19
% Moisture	%	88.2	92.9	90.9	91.9	92.0	90.5	94.1	92.2	92.4
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	15.5J	53.8	15.8J	65.6	<12.5	18.2J	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	19.3J	75.4	18.1J	105	<12.5	25.8	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	34.8	129	33.9	171	<12.5	44.0	<12.5

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 8c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Percent Lipids, Metals, Percent Moisture and PCB Arochlors for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte	Units	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC#			**CS# 125**	**10,222**	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
% Lipid	%	2.0	1.1	0.92	1.3	1.2	0.90	1.7	1.1	1.4
Arsenic	mg/Kg	0.18	1.6	1.1	1.0	0.62	0.99	0.98	0.26	0.25
Barium	mg/Kg	10.7	18.6	20.2	22.9	18.2	17.4	27.2	14.8	15.7
Cadmium	mg/Kg	0.028J	0.034J	0.047J	0.042J	0.031J	0.029J	0.047J	0.036J	0.042J
Chromium	mg/Kg	0.11	0.11	0.30	0.28	0.26	0.19	0.27	0.50	0.32
Copper	mg/Kg	1.8	4.0	4.4	3.4	2.7	2.6	3.1	3.3	3.4
Lead	mg/Kg	0.058J	0.10	0.30	0.32	0.21	0.20	0.40	0.22	0.14
Mercury	mg/Kg	<0.0069	<0.0077	0.0084J	0.0086J	<0.0073	0.0079J	0.0099J	0.0073J	<0.0065
Nickel	mg/Kg	0.063J	0.10	0.27	0.22	0.19	0.21	0.25	0.27	0.32
% Moisture	%	89.7	91.3	89.8	90.8	91.8	91.6	88.6	90.9	90.2
PCB-1016 (Aroclor 1016)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1221 (Aroclor 1221)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1232 (Aroclor 1232)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1242 (Aroclor 1242)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1248 (Aroclor 1248)	µg/Kg	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
PCB-1254 (Aroclor 1254)	µg/Kg	<12.5	<12.5	14.6J	23.3J	18.2J	<12.5	16.9J	<12.5	<12.5
PCB-1260 (Aroclor 1260)	µg/Kg	<12.5	<12.5	13.9J	29.4	19.6J	<12.5	17.5J	<12.5	<12.5
PCB, Total	µg/Kg	<12.5	<12.5	28.5	52.7	37.8	<12.5	34.4	<12.5	<12.5

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

J=Estimated Concentration above the adjusted method detection limit and below the adjusted reporting limit. (see Data Qualifiers in PACE Report)

Table 9a. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 05, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 10/08/14	Laboratory Control	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT
GLC #		**CS# 124**	**10,207**	**10,208**	**10,209**	**10,210**	**10,212**	**10,213**	**10,214**
2,3,7,8-TCDF	0.12	0.2	ND	0.53	0.85	ND	ND	0.17	0
2,3,7,8-TCDD	ND	ND	ND	0.26	ND	ND	ND	ND	ND
1,2,3,7,8-PeCDF	ND	ND	ND	0.27	ND	ND	ND	ND	ND
2,3,4,7,8-PeCDF	ND	0	ND	0.38	0	0	ND	0	0
1,2,3,7,8-PeCDD	ND	ND	ND	0	0.31	0	ND	0.078	ND
1,2,3,4,7,8-HxCDF	ND	ND	ND	0.39	0.28	0	0.12	0	0.21
1,2,3,6,7,8-HxCDF	ND	ND	0	0	0	0.12	ND	ND	0
2,3,4,6,7,8-HxCDF	ND	0	ND	0.25	0.21	ND	0	0	0
1,2,3,7,8,9-HxCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	0.082	ND	0	ND	ND	0	0.097	ND
1,2,3,6,7,8-HxCDD	ND	0.086	0	0	0	0.41	0.41	0.31	0
1,2,3,7,8,9-HxCDD	ND	ND	ND	0.28	ND	ND	ND	0	0.28
1,2,3,4,6,7,8-HpCDF	0.042	0	3.1	7.7	4.3	3.1	1.6	1.7	3
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0	3.1	2.8	4	3.1	8.1	4.7	9.8
OCDF	ND	ND	1.8	1.9	2.3	1.4	2.6	1.7	0
OCDD	0.32	0.43	34	17	33	27	77	42	95
Total TCDF	0.27	2.1	0.25	4.1	4.9	0.58	0.64	1	3.1
Total TCDD	ND	0.25	ND	2.1	ND	ND	ND	0.19	0.37
Total PeCDF	ND	ND	1.2	6.9	4.4	0.45	1.4	1.3	3.4
Total PeCDD	ND	0.091	0.25	1.4	1.1	0.14	0.28	0.65	0.94
Total HxCDF	ND	ND	2.4	11	4	2.8	1.4	1.5	3.5
Total HxCDD	0.048	0.26	1.7	4.2	2.2	1.4	4.9	3.6	4.4
Total HpCDF	0.084	0.074	6.1	14	8.2	6	4.3	3.6	6.7
Total HpCDD	0.12	0.26	9	6.3	14	11	41	23	44
TEQ[2]	0.12	0.18	0.32	1	0.98	0.4	0.4	0.34	0.58

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND)

Table 9b. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 10/22/14	Laboratory Control	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT	SS 1009-AT	SS 1017-AT	SS 1011-AT
GLC #		**CS# 124**	**10,215**	**10,216**	**10,217**	**10,218**	**10,219**	**10,220**	**10,221**
2,3,7,8-TCDF	ND	0.14	0.49	0.19	0	0	0.35	0	0.3
2,3,7,8-TCDD	ND	ND	0	ND	ND	ND	0.13	ND	0.23
1,2,3,7,8-PeCDF	ND	ND	0.25	ND	ND	ND	0.23	ND	0.43
2,3,4,7,8-PeCDF	ND	0.087	0.63	0.31	0	0.64	0.81	0.23	1.2
1,2,3,7,8-PeCDD	ND	0.082	0.58	0.12	0.36	0.46	0.43	0	0.61
1,2,3,4,7,8-HxCDF	ND	ND	0.43	0.12	0.3	0	0.79	0	0
1,2,3,6,7,8-HxCDF	ND	0.079	0.37	ND	0.29	0.17	0.71	0.16	1.4
2,3,4,6,7,8-HxCDF	ND	0	0.42	0.14	0.33	0	0.4	0.15	0.68
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	ND	ND	0	ND	0
1,2,3,4,7,8-HxCDD	ND	ND	0.23	0.12	0	0	0	ND	0
1,2,3,6,7,8-HxCDD	ND	0.091	1.2	0.26	0.93	3.2	1.2	0	1.9
1,2,3,7,8,9-HxCDD	ND	ND	0.47	ND	0	1.6	0.39	0	0.52
1,2,3,4,6,7,8-HpCDF	ND	0	8	1.1	7.1	1.3	17	2.8	25
1,2,3,4,7,8,9-HpCDF	ND	0	0.28	0	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0	0.18	4	1.5	3.4	45	2.8	2.8	3.3
OCDF	ND	0.53	2.2	1	2.4	0	3	0.9	6.6
OCDD	0	0.74	23	11	22	130	13	17	16
Total TCDF	0.14	0.78	4.4	4.2	3.9	7	6	3.5	8.9
Total TCDD	ND	0.26	3	ND	1.2	1.6	1.3	ND	2.3
Total PeCDF	ND	0.087	8.5	3	6.6	7.7	14	3.4	21
Total PeCDD	ND	0.19	1	0.21	1.4	13	2.4	0.68	5.1
Total HxCDF	ND	0.19	13	1.7	10	1.5	20	3.4	31
Total HxCDD	ND	0.22	6.4	1.2	5	51	6.5	2.2	9.4
Total HpCDF	ND	ND	16	2.1	13	2.9	29	5.6	43
Total HpCDD	ND	0.18	11	4.2	11	91	6.8	9.7	7.4
TEQ[2]	0.11	0.23	1.5	0.41	1	2	1.4	0.47	2.1

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND)

Table 9c. ***Lumbriculus variegatus*** **Tissue Analyte Results: Dioxin/Furan Compounds for the** ***L. variegatus*** **28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014. Stantec, St. Louis River, 40th Ave. Project, Duluth, Minnesota.**

Analyte Dioxin/Furans (ng/Kg)	BKGD [1] 11/12/14	Laboratory Control	Reference Sediment SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	Reference Sediment SS 1041-AT	SS 1012-AT
GLC #		**CS# 125**	**10,222**	**10,223**	**10,224**	**10,225**	**10,226**	**10,254**	**10,256**
2,3,7,8-TCDF	ND	0.39	0.72	0.29	0.56	0.55	0.33	0.32	0.11
2,3,7,8-TCDD	ND	ND	0	ND	0.17	0	0.095	ND	ND
1,2,3,7,8-PeCDF	ND	ND	0.18	0	0.16	0	0	0.086	ND
2,3,4,7,8-PeCDF	ND	ND	0	0.23	0.39	0.38	0.19	0	ND
1,2,3,7,8-PeCDD	ND	ND	0.26	0.16	0.29	0.29	0	0.19	ND
1,2,3,4,7,8-HxCDF	ND	ND	0	0.18	0.22	0.31	0.16	0	ND
1,2,3,6,7,8-HxCDF	0.064	ND	0.37	0.23	0	0	0.19	0.24	ND
2,3,4,6,7,8-HxCDF	ND	ND	0.2	0	0.13	0.24	0.18	0.1	ND
1,2,3,7,8,9-HxCDF	ND	ND	0	ND	0	0.098	ND	ND	ND
1,2,3,4,7,8-HxCDD	ND	ND	0.18	ND	0	0.16	0	0	ND
1,2,3,6,7,8-HxCDD	ND	ND	0.81	0.37	0.58	0.86	0.55	0	0.055
1,2,3,7,8,9-HxCDD	ND	ND	0.33	0	0	0.26	0.22	0	ND
1,2,3,4,6,7,8-HpCDF	0.089	0	5.6	2.9	3.7	5.5	6.6	5.1	0
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4,6,7,8-HpCDD	0.096	0.5	2.8	2.2	2	3	4.9	2.1	0
OCDF	ND	ND	1.6	1.3	1.2	1.4	2.5	1.1	ND
OCDD	0	0	15	16	11	16	81	9.7	0.53
Total TCDF	ND	1.7	7.4	2.9	7.2	5.6	2.7	2	0.71
Total TCDD	ND	ND	2.9	0.25	1.9	2.2	0.37	0.95	0.29
Total PeCDF	ND	ND	7.4	3.1	6.7	7.5	4	4.3	ND
Total PeCDD	0.086	ND	3.1	0.94	2.5	2.9	1.1	1.6	0.086
Total HxCDF	0.14	ND	9	3.6	5.4	8.5	6.2	6.5	0.045
Total HxCDD	ND	ND	5.7	1.4	3.6	5.6	4.9	2.8	0.19
Total HpCDF	0.089	ND	11	5.7	7	10	13	9.5	ND
Total HpCDD	0.17	0.5	7	6.4	5.7	8.3	18	5.1	ND
TEQ[2]	0.17	0.29	0.89	0.47	0.84	0.9	0.58	0.55	0.087

[1] BKGD are the *Lumbriculus* needed to initiate the bioassay; Day 0 tissue concentrations.

[2] Total 2,3,7,8-TCDD equivalence, using 2005 World Health Organization (WHO) Factors_ Using Reporting Limit /2 where no detect (ND).

Table 10. (page 1 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=22	**pH (s.u.)** (range) N=4	**Dissolved Oxygen (mg/L)** (range) N=22	**Specific Conductivity (µS/cm)** (range) N=4	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
Control CS# 124	**22.6** (22.0-23.0)	**7.70** (7.45-7.97)	**4.1** (2.7-7.5)	**337** (331-343)	**148** (144-152)	**114** (108-120)	**1.06** (0.81-1.30
SS 1022-AT 10,207	**22.8** (22.1-23.0)	**7.70** (7.50-7.90)	**5.3** (4.0-7.4)	**325** (315-332)	**140** (132-152)	**95** (92-100)	**0.14** (0.13-0.15)
SS 1024-AT 10,208	**22.7** (22.1-23.0)	**7.56** (7.48-7.62)	**5.1** (3.9-6.3)	**311** (305-319)	**137** (124-148)	**100** (98-102)	**0.16** (0.14-0.20
SS 1032-AT 10,209	**22.7** (22.0-22.9)	**7.58** (7.51-7.64)	**5.3** (3.8-6.5)	**304** (299-309)	**130** (124-136)	**94** (90-98)	**0.17** (0.13-0.20)
SS 1021-AT 10,210	**22.7** (22.3-22.9)	**7.67** (7.56-7.78)	**5.2** (4.1-6.6)	**317** (316-319)	**140** (140-140)	**100** (98-102)	**0.16** (0.14-0.18)
SS 1026-AT 10,212	**22.7** (22.3-23.0)	**7.54** (7.49-7.57)	**5.0** (3.4-6.7)	**311** (308-315)	**132** (124-140)	**96** (92-100)	**0.22** (0.17-0.27)
SS 1028-AT 10,213	**22.7** (22.3-22.9)	**7.67** (7.65-7.71)	**4.7** (3.4-6.2)	**322** (318-324)	**135** (132-136)	**107** (106-108)	**0.34** (0.21-0.60)
SS 1025-AT 10,214	**22.7** (22.3-22.9)	**7.53** (7.50-7.56)	**4.9** (3.0-6.3)	**306** (302-310)	**132** (124-140)	**94** (90-98)	**0.24** (0.15-0.33)
SS 1010-AT 10,215	**22.6** (22.1-22.9)	**7.58** (7.49-7.67)	**4.9** (3.9-6.7)	**310** (307-312)	**132** (128-136)	**100** (98-102)	**0.16** (0.13-0.19)
SS 1029-AT 10,216	**22.6** (22.3-22.8)	**7.88** (7.63-8.17)	**4.7** (4.0-6.2)	**336** (329-341)	**152** (148-156)	**120** (108-132)	**0.42** (0.38-0.45)
SS 1001-AT 10,217	**22.7** (22.1-23.6)	**7.59** (7.48-7.67)	**5.1** (3.3-6.8)	**311** (308-314)	**140** (136-144)	**98** (96-100)	**0.22** (0.16-0.28)
SS 1042-AT 10,218	**22.8** (22.2-23.6)	**7.84** (7.69-7.99)	**4.5** (3.2-6.1)	**350** (342-364)	**150** (140-160)	**123** (122-124)	**0.72** (0.70-0.73)

Table 10. (page 2 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=22	**pH (s.u.)** (range) N=4	**Dissolved Oxygen (mg/L)** (range) N=22	**Specific Conductivity (µS/cm)** (range) N=4	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
SS 1009-AT 10,219	**22.8** (22.2-23.6)	**7.59** (7.49-7.69)	**5.0** (3.8-6.6)	**305** (298-311)	**134** (132-136)	**97** (96-98)	**0.16** (0.15-0.17)
SS1017-AT 10,220	**22.8** (22.2-23.7)	**7.52** (7.46-7.58)	**4.9** (3.8-6.5)	**308** (304-312)	**130** (128-132)	**97** (96-98)	**0.21** (0.16-0.25)
SS 1011-AT 10,221	**22.8** (22.2-23.6)	**7.63** (7.51-7.70)	**5.3** (4.0-6.4)	**310** (306-313)	**130** (120-140)	**97** (96-98)	**0.15** (0.14-0.16)
SS 1031-AT 10,222	**22.8** (22.2-23.6)	**7.49** (7.39-7.60)	**5.0** (3.6-6.2)	**303** (300-306)	**129.3** (124-132)	**96** (96-96)	**0.24** (0.16-0.28)
SS 1033-AT 10,223	**22.7** (22.2-23.5)	**7.51** (7.32-7.81)	**4.6** (3.3-6.2)	**313** (301-326)	**132** (124-140)	**95** (86-104)	**0.26** (0.19-0.33)
SS 1034-AT 10,224	**22.8** (22.2-23.5)	**7.32** (7.25-7.41)	**4.7** (4.0-5.7)	**312** (303-319)	**122** (120-124)	**95** (90-100)	**1.49** (0.30-2.68)
SS 1002-AT 10,225	**22.8** (22.2-23.6)	**7.48** (7.37-7.60)	**4.9** (4.0-5.8)	**303** (289-318)	**126** (120-132)	**94** (88-100)	**0.44** (0.22-0.65)
SS 1005-AT 10,226	**22.8** (22.2-23.5)	**7.57** (7.50-7.66)	**5.1** (3.4-6.2)	**305** (299-311)	**132** (120-144)	**96** (94-98)	**0.19** (0.13-0.24)
SS 1041-AT 10,254	**22.8** (22.2-23.6)	**7.68** (7.48-7.87)	**5.7** (4.4-6.9)	**321** (310-331)	**140** (136-144)	**104** (98-110)	**0.31** (0.15-0.46)
SS 1012-AT 10,256	**22.8** (22.2-23.4)	**7.29** (7.22-7.36)	**6.0** (5.4-6.5)	**277.2** (261-293)	**116** (108-124)	**81** (74-88)	**0.78** (0.23-1.33)
Water Only Secondary Control	**22.8** (22.2-23.1)	**7.91** (7.66-8.16)	**5.8** (4.4-8.4)	**311** (307-315)	**138** (136-140)	**103** (100-106)	**0.30** (0.10-0.49)

Table 11. (page 1 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=28	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=12	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
Control CS# 124	**22.5** (22.1-23.0)	**7.83** (7.65-8.20)	**5.8** (4.8-6.6)	**330** (313-353)	**142** (132-152)	**113** (106-120)	**0.71** (0.11-1.30)
SS 1022-AT 10,207	**22.7** (22.1-23.1)	**7.77** (7.62-7.97)	**6.6** (5.4-7.5)	**318** (308-333)	**135** (132-136)	**97** (92-104)	**0.13** (0.12-0.15)
SS 1024-AT 10,208	**22.6** (22.1-23.1)	**7.71** (7.49-7.93)	**6.6** (5.3-7.6)	**311** (305-316)	**130** (124-136)	**102** (98-106)	**0.17** (0.13-0.20)
SS 1032-AT 10,209	**22.7** (22.1-23.1)	**7.84** (7.62-8.05)	**6.8** (6.0-7.6)	**309** (301-315)	**130** (124-136)	**96** (90-102)	**0.17** (0.14-0.20)
SS 1021-AT 10,210	**22.7** (22.1-23.1)	**7.90** (7.71-8.12)	**6.8** (5.3-8.0)	**314** (306-317)	**144** (140-148)	**101** (98-104)	**0.17** (0.15-0.18)
SS 1026-AT 10,212	**22.7** (22.2-23.1)	**7.98** (7.53-8.31)	**6.5** (5.3-7.9)	**322** (306-338)	**136** (124-148)	**100** (92-108)	**0.20** (0.13-0.27)
SS 1028-AT 10,213	**22.7** (22.2-23.1)	**8.04** (7.59-8.59)	**6.2** (5.1-7.6)	**325** (312-344)	**136** (132-140)	**107** (106-108)	**0.36** (0.11-0.60)
SS 1025-AT 10,214	**22.7** (22.1-23.1)	**7.91** (7.44-8.18)	**6.6** (5.6-7.7)	**315** (299-327)	**130** (124-136)	**97** (90-104)	**0.23** (0.12-0.33)
SS 1010-AT 10,215	**22.7** (22.1-23.2)	**7.76** (7.49-7.94)	**6.8** (6.1-7.7)	**310** (306-313)	**138** (128-148)	**101** (98-104)	**0.16** (0.12-0.19)
SS 1029-AT 10,216	**22.7** (22.4-23.2)	**8.03** (7.54-8.42)	**6.7** (5.1-7.9)	**329** (315-386)	**147** (140-156)	**117** (110-132)	**0.22** (0.10-0.45)
SS 1001-AT 10,217	**22.7** (22.3-23.0)	**7.74** (7.54-7.99)	**6.7** (5.5-7.5)	**312** (308-315)	**138** (136-140)	**98** (96-100)	**0.20** (0.12-0.28)
SS 1042-AT 10,218	**22.8** (22.5-23.0)	**8.08** (7.49-8.72)	**5.9** (4.5-7.6)	**340** (328-353)	**140** (140-140)	**116** (108-124)	**0.42** (0.14-0.70)

Table 11. (page 2 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014; Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=28	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=12	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222	**Ammonia (mg/L as N)** (range) N=2, N=3 for GLC 10207 and 10216 N=4 for GLC 10222
SS 1009-AT 10,219	**22.7** (22.2-23.1)	**7.81** (7.64-8.09)	**6.7** (4.9-7.8)	**300** (238-319)	**136** (132-140)	**99** (96-102)	**0.16** (0.15-0.17)
SS 1017-AT 10,220	**22.8** (22.3-23.1)	**7.77** (7.57-7.98)	**6.8** (6.0-8.1)	**310** (304-314)	**132** (132-132)	**100** (96-104)	**0.22** (0.19-0.25)
SS 1011-AT 10,221	**22.9** (22.3-23.2)	**7.82** (7.69-7.98)	**6.8** (6.1-8.1)	**310** (304-315)	**130** (120-140)	**100** (96-104)	**0.17** (0.16-0.18)
SS 1031-AT 10,222	**22.8** (22.4-23.1)	**7.79** (7.55-8.05)	**6.7** (5.7-8.1)	**309** (299-315)	**136** (124-148)	**102** (96-108)	**0.21** (0.13-0.28)
SS 1033-AT 10,223	**22.8** (22.3-23.3)	**8.08** (7.39-8.74)	**6.1** (4.9-7.9)	**325** (302-356)	**132** (124-140)	**93** (86-100)	**0.24** (0.14-0.33)
SS 1034-AT 10,224	**22.8** (22.3-23.2)	**8.04** (7.28-8.80)	**5.9** (4.6-7.3)	**332** (299-361)	**138** (120-156)	**104** (100-108)	**1.39** (0.10-2.68)
SS 1002-AT 10,225	**22.9** (22.4-23.4)	**7.84** (7.30-8.25)	**6.1** (5.4-7.5)	**311** (284-329)	**128** (120-136)	**94** (88-100)	**0.36** (0.06-0.65)
SS 1005-AT 10,226	**22.9** (22.2-23.6)	**7.78** (7.60-7.97)	**6.6** (4.7-7.5)	**307** (300-311)	**132** (120-144)	**98** (94-102)	**0.16** (0.08-0.24)
SS 1041-AT 10,254	**22.9** (22.5-23.6)	**7.91** (7.76-8.15)	**7.0** (6.2-7.7)	**315** (304-333)	**138** (136-140)	**108** (106-110)	**0.30** (0.13-0.46)
SS 1012-AT 10,256	**22.9** (22.3-23.8)	**7.59** (7.19-7.86)	**6.9** (5.9-7.8)	**288.0** (245-301)	**118** (108-128)	**86** (74-98)	**0.74** (0.15-1.33)
Water Only Secondary Control	**22.7** (22.2-23.1)	**7.94** (7.76-8.13)	**7.0** (5.55-8.0)	**311** (307-315)	**142** (140-144)	**100** (100-100)	**0.11** (0.10-0.11)

Table 12. (page 1 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 4-Day Sediment Toxicity Screening Tests Conducted October 04-07, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=10	**pH (s.u.)** (range) N=4	**Dissolved Oxygen (mg/L)** (range) N=10	**Specific Conductivity (µS/cm)** (range) N=4	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=1 for GLC 10207	**Ammonia (mg/L as N)** (range) N=2, N=1 for GLC 10207
Control CS# 123	**22.7** (22.5-23.1)	**7.82** (7.74-7.91)	**5.2** (3.2-5.9)	**335** (306-365)	**162** (156-168)	**132** (124-140)	**0.77** (0.63-0.90)
SS 1022-AT 10,207	**22.8** (22.5-23.0)	**7.67** (7.55-7.78)	**5.8** (5.2-6.2)	**309** (298-314)	**144** (144-144)	**96** (96-96)	**0.11** (0.11-0.11)
SS 1024-AT 10,208	**22.7** (22.6-23.0)	**7.62** (7.58-7.65)	**6.1** (5.6-6.7)	**305** (299-311)	**132** (124-140)	**99** (98-100)	**0.16** (0.13-0.18)
SS 1032-AT 10,209	**22.8** (22.5-23.0)	**7.67** (7.60-7.76)	**6.5** (6.0-6.8)	**298** (295-303)	**128** (124-132)	**96** (90-100)	**0.19** (0.14-0.24)
SS 1021-AT 10,210	**22.8** (22.6-22.9)	**7.77** (7.73-7.83)	**6.5** (6.0-7.0)	**308** (307-308)	**142** (140-144)	**99** (98-100)	**0.12** (0.11-0.13)
SS 1026-AT 10,212	**22.7** (22.5-22.9)	**7.59** (7.51-7.71)	**6.3** (5.5-7.1)	**300** (297-303)	**132** (120-144)	**94** (90-98)	**0.18** (0.14-0.20)
SS 1028-AT 10,213	**22.7** (22.5-22.9)	**7.61** (7.54-7.70)	**5.9** (4.7-6.7)	**309** (300-316)	**128** (128-128)	**105** (104-106)	**0.30** (0.20-0.36)
SS 1025-AT 10,214	**22.8** (22.6-22.9)	**7.53** (7.45-7.61)	**6.1** (5.4-6.7)	**298** (295-301)	**128** (124-132)	**94** (90-98)	**0.17** (0.13-0.20)
SS 1010-AT 10,215	**22.8** (22.6-22.9)	**7.65** (7.60-7.70)	**6.4** (5.9-6.9)	**302** (301-303)	**134** (132-136)	**100** (100-100)	**0.10** (0.09-0.11)
SS 1029-AT 10,216	**22.8** (22.6-22.9)	**8.03** (8.00-8.05)	**6.0** (5.2-6.6)	**341** (338-345)	**160** (152-168)	**123** (122-124)	**0.27** (0.11-0.43)

Table 12. (page 2 of 2) **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 4-Day Sediment Toxicity Screening Tests Conducted October 04-07, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=10	**pH (s.u.)** (range) N=4	**Dissolved Oxygen (mg/L)** (range) N=10	**Specific Conductivity (µS/cm)** (range) N=4	**Hardness (CaCO3 mg/L)** (range) N=2, N=3 for GLC 10207	**Alkalinity (CaCO3 mg/L)** (range) N=2, N=1 for GLC 10207	**Ammonia (mg/L as N)** (range) N=2, N=1 for GLC 10207
SS 1001-AT 10,217	**22.7** (22.6-22.9)	**7.61** (7.55-7.67)	**6.1** (5.4-6.4)	**302** (300-304)	**132** (124-140)	**100** (100-100)	**0.18** (0.11-0.25)
SS 1042-AT 10,218	**22.7** (22.5-22.8)	**7.77** (7.58-7.99)	**5.6** (4.2-6.3)	**334** (329-337)	**150** (148-152)	**116** (116-116)	**0.27** (0.26-0.28)
SS 1009-AT 10,219	**22.7** (22.6-22.8)	**7.68** (7.59-7.77)	**6.4** (5.9-6.9)	**300** (298-302)	**130** (124-136)	**100** (96-102)	**0.09** (0.07-0.13)
SS1017-AT 10,220	**22.7** (22.6-22.9)	**7.65** (7.60-7.69)	**6.5** (6.2-6.8)	**300** (296-303)	**132** (128-136)	**99** (98-100)	**0.14** (0.12-0.15)
SS 1011-AT 10,221	**22.8** (22.5-23.0)	**7.72** (7.60-7.80)	**6.7** (6.4-7.1)	**305** (302-310)	**130** (124-136)	**102** (100-104)	**0.13** (0.08-0.17)
SS 1031-AT 10,222	**22.8** (22.7-22.9)	**7.54** (7.43-7.61)	**6.5** (5.7-6.9)	**297** (294-301)	**128** (124-132)	**98** (96-100)	**0.25** (0.22-0.28)
SS 1033-AT 10,223	**22.8** (22.7-22.9)	**7.58** (7.42-7.78)	**6.2** (5.0-6.8)	**300** (294-306)	**126** (124-128)	**93** (84-102)	**0.31** (0.27-0.34)
SS-1034-AT 10,224	**22.8** (22.6-22.9)	**7.42** (7.28-7.54)	**6.1** (5.6-6.7)	**307** (292-321)	**127** (126-128)	**101** (98-104)	**1.50** (0.60-2.40)
SS 1002-AT 10,225	**22.8** (22.7-22.9)	**7.54** (7.35-7.74)	**6.2** (5.8-6.6)	**284** (247-303)	**128** (124-136)	**93** (88-98)	**0.32** (0.18-0.46)
SS 1005-AT 10,226	**22.8** (22.7-23.0)	**7.71** (7.56-7.84)	**6.3** (5.9-6.9)	**304** (295-315)	**134** (120-148)	**94** (88-100)	**0.14** (0.12-0.15)
SS 1041-AT 10,254	**22.8** (22.6-22.9)	**7.79** (7.74-7.85)	**6.5** (6.0-7.0)	**311** (306-315)	**138** (136-140)	**106** (104-108)	**0.15** (0.13-0.16)
SS 1012-AT 10,256	**22.8** (22.6-22.9)	**7.39** (7.27-7.51)	**6.6** (5.9-7.2)	**272.6** (267-279)	**112** (104-120)	**90** (78-102)	**0.80** (0.55-1.04)

Table 13. **Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 08-November 5, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.**

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=10	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=10	**Flows** (ml/min) N=145	**Hardness (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10207, 10208, 10209,10210, 10213, and 10214	**Alkalinity (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10207, 10209, 10210, and 10213	**Ammonia (mg/L as N)** (range) N=5, N=9 for GLC 10207 and 10216 N=6 for GLC 10212
Control CS# 124	**22.8** (22.0-23.6)	**7.94** (7.76-8.29)	**6.6** (5.0-8.4)	**320** (313-332)	**4.9** (3.2-6.5)	**135** (128-148)	**107** (104-114)	**0.55** (0.13-1.04)
SS 1022-AT 10,207	**22.8** (22.0-23.7)	**8.00** (7.82-8.28)	**7.0** (6.0-8.4)	**311** (305-317)	**4.8** (3.3-6.2)	**132** (120-144)	**103** (100-112)	**0.34** (0.07-0.46)
SS 1024-AT 10,208	**22.7** (22.1-23.5)	**7.99** (7.84-8.28)	**7.2** (5.9-8.5)	**308** (298.2-313)	**4.9** (3.2-7.0)	**129** (124-132)	**103** (100-108)	**0.26** (0.08-0.41)
SS 1032-AT 10,209	**22.8** (22.0-23.5)	**8.10** (8.00-8.31)	**7.4** (6.4-8.5)	**309** (301-315)	**4.7** (3.1-7.0)	**130** (124-140)	**103** (98-110)	**0.30** (0.09-0.46)
SS 1021-AT 10,210	**22.7** (22.1-23.4)	**8.05** (7.90-8.32)	**7.3** (6.4-8.6)	**311** (301-317)	**4.9** (3.4-6.4)	**134** (124-148)	**104** (102-112)	**0.28** (0.09-0.46)
SS 1026-AT 10,212	**22.6** (22.1-23.2)	**8.06** (7.93-8.28)	**7.3** (5.4-8.6)	**309** (302-318)	**4.7** (3.2-7.0)	**134.4** (124-148)	**104** (100-108)	**0.33** (0.11-0.69)
SS 1028-AT 10,213	**22.7** (22.0-23.4)	**8.05** (7.87-8.32)	**7.1** (5.3-8.5)	**311** (306-317)	**5.4** (3.5-7.0)	**136** (124-148)	**105** (100-110)	**0.35** (0.11-0.59)
SS 1025-AT 10,214	**22.7** (22.2-23.1)	**7.92** (7.65-8.26)	**6.6** (4.0-8.6)	**310** (302-318)	**4.9** (3.2-7.0)	**137** (128-152)	**102** (100-110)	**0.37** (0.08-0.53)

Table 14. Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted October 22-November 19, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=10	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=10	**Flows** (ml/min) N=145	**Hardness (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10215, N=7 10216	**Alkalinity (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10216 N=7 10215	**Ammonia (mg/L as N)** (range) N=5, N=6 for GLC 10215, 10217, 10218, 10219, and 10221
Control CS# 124	**22.8** (22.2-23.3)	**7.97** (7.80-8.25)	**7.1** (6.0-9.0)	**318** (308-328)	**4.8** (3.2-7.0)	**136** (128-140)	**101** (96-106)	**0.52** (0.18-0.97)
SS 1010-AT 10,215	**22.8** (22.3-23.5)	**8.00** (7.90-8.25)	**7.3** (6.6-8.6)	**310** (299.7-322.9)	**4.9** (3.0-7.0)	**131** (124-136)	**99** (98-100	**0.36** (0.04-0.62)
SS 1029-AT 10,216	**22.8** (22.3-23.4)	**8.05** (7.89-8.34)	**7.2** (6.4-8.4)	**321** (312-335)	**4.7** (3.2-6.2)	**139** (132-152)	**106** (98-110)	**0.36** (0.12-0.96)
SS 1001-AT 10,217	**22.8** (22.3-23.3)	**8.02** (7.85-8.26)	**7.3** (6.7-8.4)	**310** (300-322)	**5.0** (3.4-6.9)	**135** (124-160)	**101** (96-108)	**0.31** (0.06-0.74)
SS 1042-AT 10,218	**22.8** (22.2-23.3)	**8.04** (7.90-8.27)	**7.5** (6.8-8.3)	**312** (307-319)	**5.1** (3.2-6.6)	**136** (124-148)	**99** (92-104)	**0.37** (0.09-0.86)
SS 1009-AT 10,219	**22.7** (22.2-23.1)	**8.06** (7.90-8.27)	**7.5** (6.8-8.4)	**309** (298.1-318)	**4.9** (3.0-6.6)	**132** (124-136)	**104** (100-112)	**0.30** (0.03-0.70)
SS1017-AT 10,220	**22.8** (22.3-23.2)	**8.01** (7.87-8.25)	**7.3** (6.6-8.4)	**311** (299.1-327)	**4.9** (3.7-6.8)	**134** (124-144)	**98** (94-100)	**0.35** (0.04-0.71)
SS 1011-AT 10,221	**22.7** (22.1-23.1)	**7.99** (7.82-8.24)	**7.4** (6.1-8.4)	**312** (298.7-325)	**4.5** (3.1-6.6)	**130** (124-140)	**101** (100-104)	**0.34** (0.05-0.81)

Table 15. Summary of Mean Water Quality Parameters of Overlying Water Collected Prior to Renewal; *Lumbriculus variegatus* 28-Day Bioaccumulation Whole Sediment Toxicity Tests Conducted November 12-December 10, 2014; Stantec, St. Louis River 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	**Temperature (°C)** (range) N=58	**pH (s.u.)** (range) N=28	**Dissolved Oxygen (mg/L)** (range) N=58	**Specific Conductivity (µS/cm)** (range) N=12	**Flows** (ml/min) N=145	**Hardness (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10222, 10223, and 10225, N=7 for GLC 10224	**Alkalinity (CaCO3 mg/L)** (range) N=5, N=6 for GLC 10224, and 10225, N= 7 for GLC 10223	**Ammonia (mg/L as N)** (range) N=5, N=6 for GLC 10222, 10223, 10224, 10225 and 10254
Control CS#125	**22.8** (22.4-23.6)	**7.87** (7.64-8.28)	**6.4** (5.0-8.4)	**321** (311-333)	**4.3** (3.1-5.6)	**136.8** (128-144)	**106.4** (102-112)	**0.31** (0.14-0.91)
SS 1031-AT 10,222	**22.9** (22.4-23.6)	**7.86** (7.67-8.19)	**6.9** (5.7-8.3)	**307** (301-313)	**4.7** (3.2-6.0)	**135** (132-140)	**98** (96-102)	**0.27** (0.06-0.92)
SS 1033-AT 10,223	**22.8** (22.3-23.5)	**7.96** (7.74-8.26)	**7.2** (6.0-8.5)	**310** (305-315)	**4.5** (3.0-6.6)	**131** (128-136)	**99** (98-100)	**0.76** (0.07-1.72)
SS-1034-AT 10,224	**22.9** (22.3-23.6)	**7.96** (7.75-8.23)	**7.3** (6.4-8.4)	**308** (303-312)	**4.8** (3.6-6.6)	**134** (128-140)	**97** (92-100)	**0.39** (0.10-1.02)
SS 1002-AT 10,225	**22.8** (22.3-23.4)	**7.88** (7.55-8.22)	**7.1** (5.2-8.4)	**305** (299.6-310)	**4.8** (3.7-6.2)	**134** (124-140)	**97** (92-100)	**0.42** (0.09-0.93)
SS 1005-AT 10,226	**22.8** (22.4-23.5)	**8.04** (7.87-8.29)	**7.5** (6.4-8.4)	**310** (305-314)	**4.4** (3.2-5.8)	**137** (124-148)	**101** (100-104)	**0.31** (0.04-0.79)
SS 1041-AT 10,254	**22.9** (22.5-23.5)	**8.05** (7.88-8.34)	**7.5** (6.2-8.5)	**313** (305-317)	**4.8** (3.2-6.4)	**136** (132-140)	**104** (100-106)	**0.26** (0.08-0.63)
SS 1012-AT 10,256	**22.8** (22.3-23.4)	**7.85** (7.59-8.04)	**6.9** (4.7-8.2)	**305** (295.4-314)	**4.6** (3.0-6.4)	**134** (124-140)	**99** (96-104)	**0.44** (0.20-0.80)

Table 16. (page 1 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	10-Day Survival	10-Day Growth[1] (AFDW)	10-Day Biomass[2] (AFDW)
SS 1022-AT 10,207	**c**	**b**	**b,c**
SS 1024-AT 10,208	**c**		
SS 1032-AT 10,209		**b**	**b**
SS 1021-AT 10,210			
SS 1026-AT 10,212			
SS 1028-AT 10,213			
SS 1025-AT 10,214			
SS 1010-AT 10,215	**c**		
SS 1029-AT 10,216			
SS 1001-AT 10,217	**b,c**		
SS 1042-AT 10,218			

[1] Growth is average Ash-Free-Dry-Weight (AFDW) of surviving organisms
[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 16.
(page 2 of 2)

Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;
***Chironomus dilutus* 10-Day Whole Sediment Toxicity Tests Conducted November 04-November 14, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	10-Day Survival	10-Day Growth[1] (AFDW)	10-Day Biomass[2] (AFDW)
SS 1009-AT 10,219			
SS1017-AT 10,220			
SS 1011-AT 10,221	**c**		
SS 1033-AT 10,223			
SS-1034-AT 10,224	**c**		
SS 1002-AT 10,225	**c**		
SS 1005-AT 10,226	**b,c**		**b**
SS 1012-AT 10,256	**c**		

[1] Growth is average Ash-Free-Dry-Weight (AFDW) of surviving organisms
[2] Biomass weight is the total Ash-Free-Dry-Weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 17. (page 1 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	28-Day Survival	28-Day Growth[1]	28-Day Biomass[2]
SS 1022-AT 10,207		**b,c**	**b,c**
SS 1024-AT 10,208		**c**	**c**
SS 1032-AT 10,209		**c**	**c**
SS 1021-AT 10,210		**b,c**	**b,c**
SS 1026-AT 10,212			
SS 1028-AT 10,213	**c**		
SS 1025-AT 10,214			**c**
SS 1010-AT 10,215		**b,c**	**b,c**
SS 1029-AT 10,216			
SS 1001-AT 10,217		**c**	**c**
SS 1042-AT 10,218	**b,c**		

[1] Growth is average dry weight of surviving organisms
[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms
[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)
[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 17. (page 2 of 2) **Summary of Statistically Significant Differences (p< 0.05) Between the Reference Sediments and Investigative Sediment Samples;**
***Hyalella azteca* 28-Day Whole Sediment Toxicity Tests Conducted November 04-December 02, 2014;**
Stantec, St. Louis River, 40th Avenue Project, Duluth, Minnesota.

Sample ID GLC #	28-Day Survival	28-Day Growth[1]	28-Day Biomass[2]
SS 1009-AT 10,219			**c**
SS1017-AT 10,220		**c**	**c**
SS 1011-AT 10,221	**c**	**c**	**c**
SS 1033-AT 10,223			
SS-1034-AT 10,224			
SS 1002-AT 10,225			
SS 1005-AT 10,226		**c**	**c**
SS 1012-AT 10,256		**b,c**	**b,c**

[1] Growth is average dry weight of surviving organisms

[2] Biomass weight is the total dry weight of surviving organisms divided by the initial number of organisms

[b] Significantly different (p< 0.05) from site reference sediment SS 1031-AT (GLC Number: 10,222)

[c] Significantly different (p< 0.05) from site reference sediment SS 1041-AT (GLC Number: 10,254)

Table 18. **Sediment Chemistry Results: Percent Moisture, Total Organic Carbon, and Grain Size for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.**

Analyte	SS 1022-AT	SS 1024-AT	SS 1032-AT	SS 1021-AT	SS 1026-AT	SS 1028-AT	SS 1025-AT	SS 1010-AT	SS 1029-AT	SS 1001-AT	SS 1042-AT
Percent Moisture (%)	54.7	51.2	49.1	46.2	60.7	52.7	70.9	55.3	30.5	55.8	34.4
Total Organic Carbon (mg/kg)	100,000	31,700	37,700	44,100	102,000	134,000	92,900	45,700	38,000	52,700	30,200
Grain Size											
Percent Clay (%)	20.0	20.0	12.5	12.5	12.5	7.5	22.5	20.0	5.0	20.0	7.5
Percent Sand (%)	25.0	20.0	47.5	45.0	37.5	72.5	17.5	22.5	80.0	27.5	75.0
Percent Silt (%)	55.0	60.0	40.0	42.5	50.0	20.0	60.0	57.5	15.0	52.5	17.5
Texture	silt loam	silt loam	loam	loam	silt loam	sandy loam	silt loam	silt loam	loamy sand	silt loam	sandy loam

Table 18. (continued) **Sediment Chemistry Results: Percent Moisture, Total Organic Carbon, and Grain Size for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.**

Analyte	SS 1009-AT	SS 1017-AT	SS 1011-AT	SS 1031-AT	SS 1033-AT	SS 1034-AT	SS 1002-AT	SS 1005-AT	SS 1041-AT	SS 1012-AT
Percent Moisture (%)	50.8	55.0	51.2	57.1	71.6	70.8	66.3	56.4	25.0	41.8
Total Organic Carbon (mg/kg)	60,400	82,900	46,500	40,300	95,000	55,300	75,400	97,700	2,710	35,500
Grain Size										
Percent Clay (%)	15.0	17.5	17.5	22.5	27.5	32.5	27.5	20.0	2.5	12.5
Percent Sand (%)	52.5	30.0	60.0	22.5	10.0	10.0	15.0	22.5	92.5	57.5
Percent Silt (%)	32.5	52.5	22.5	55.0	62.5	57.5	57.5	57.5	5.0	30.0
Texture	sandy loam	silt loam	sandy loam	silt loam	silty clay loam	silty clay loam	silty clay loam	silt loam	sand	sandy loam

Table 19.
(page 1 of 2)

Macroinvertebrate Indices for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.

Index	SS 1029-BCA	SS 1001-BCA	SS 1002-BCA	SS 1031-BCA	SS 1032-BCA	SS 1021-BCA	SS 1042-BCA	SS 1028-BCA	SS 1010-BCA	SS 1025-BCA	SS 1026-BCA
Abundance	115	40	37	17	9	18	97	61	35	58	59
Taxa Richness	21	12	9	6	12	10	17	13	9	16	17
Shannon-Weaver Diversity Index	2.343	2.144	1.876	1.646	2.351	2.058	2.425	2.101	1.803	2.096	2.415
Simpson Diversity Index	6.206	5.926	5.205	4.738	9.000	6.231	8.769	5.751	4.268	4.861	7.718
Hilsenhoff Biotic Index	5.586	5.853	3.914	6.747	5.367	5.839	5.478	6.639	6.163	6.672	6.402
Scrapers/Filterers	0.2	0	0	0	2.0	0	0.05	0.06	0	0	0
Shredders/Total	0	0	0	0	0	0	0	0	0	0	0
Dominant-Taxon Percent Composition	34.78%	35.00%	32.43%	29.41%	44.44%	27.78%	21.65%	32.79%	42.86%	39.66%	28.81%
EPT Index	0.615	0.095	0.556	0.000	0.125	0.500	0.128	0.182	0.261	0.026	0.064

Table 19.
(page 2 of 2)

Macroinvertebrate Indices for the Stantec, St. Louis River, 40th Avenue Project, Duluth Minnesota.

Index	SS 1033-BCA	SS 1034-BCA	SS 1022-BCA	SS 1024-BCA	SS 1041-BCA	SS 1012-BCA	SS 1017-BCA	SS 1011-BCA	SS 1009-BCA	SS 1005-BCA
Abundance	21	17	10	2	8	11	8	8	19	9
Taxa Richness	5	4	6	2	3	4	5	3	10	6
Shannon-Weaver Diversity Index	1.204	1.236	1.748	0.693	0.974	1.241	1.560	0.900	2.160	1.677
Simpson Diversity Index	2.579	3.108	5.556	2.000	2.462	3.103	4.571	2.133	7.681	4.765
Hilsenhoff Biotic Index	6.948	7.082	5.240	6.600	5.963	6.473	6.825	5.875	5.568	4.900
Scrapers/Filterers	0	0	0	0	0	0	0	0	0.25	0
Shredders/Total	0	0	0	0	0	0	0	0	0	0
Dominant-Taxon Percent Composition	57.14%	41.18%	20.00%	50.00%	50.00%	45.45%	25.00%	62.50%	21.05%	33.33%
EPT Index	0.059	0.000	0.400	0.000	1.000	0.375	0.333	0.333	0.273	1.000

Appendix A
Chain of Custodies

2290-00

GREAT LAKES ENVIRONMENTAL CENTER, INC.

CHAIN OF CUSTODY RECORD

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10207	SS 1022-AT (15cm)	9-16-14	0900	S	C	NONE	POLY	3-GAL	1	X		Temp	1.7			dark	brown		
2	10208	SS 1024-AT (15cm)	9-16-14	1045	S	C	NONE	POLY	3-GAL	1	X		Temp	1.9			dark	brown		
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-16-14	1900	Print Name & Organization: Maile W. Barton / GLEC	9/17/14	1100
Signature: Matthew Pontier	9-16-14	1900	Signature: Maile W. Barton	"	"
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: See above °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GLEC
Great Lakes Environmental Center

GREAT LAKES ENVIRONMENTAL CENTER, INC.

TRAVERSE CITY, MI - LABORATORY
739 Hastings Street
Traverse City, MI 49686

www.glec.com
Phone (231)941-2230
Fax (231)941-2240

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045 E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY									
1	10209	SS 1032-AT (15cm)	9-15-14	1545	S	COMP.	NONE	POLY	3-GAL	1	X	dmp 1.8	dark brown							
2	10210	SS 1021-AT (15cm)	9-15-14	1810	S	COMP	NONE	POLY	3-GAL	1	X	dmp 1.8	dark brown							
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE 9/17/14	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-16-14	1900	Print Name & Organization: Marlee W. Garton / GLEC	9/17/14	1100
Signature: Matthew Pontier	9-16-14	1900	Signature: Marlee W. Garton	"	"
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: see above °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

GLEC may subcontract out analyses that we do not perform.

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Project Name: 40th AVENUE PROJECT

Report Results To: DAVID CONSTANT

Project Number: 193702726.200

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

P.O.#:

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10217	SS1026-AT (15cm)	9-16-14	1445	S	C	NONE	POLY	3-GAL	1	X	Jar	1.7	dark brown						
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Mailer W. Garton	9/18/14	1038
Signature: Matthew Pontier	9-17-14	1600	Signature		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 1.7 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies:

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES							
1	10713	SS1028-AT (15cm)	9-16-14	1530	S	C	NONE	POLY	3-GAL	1	X								
2																			
3																			
4																			
5																			
6																			
7																			
8																			

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Michael W Gant	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY
Temperature of Samples: 1.4 °C
☒ Received on Wet Ice
Notes/Anomalies/Discrepancies:

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10214	SS 1025-AT (15cm)	9-16-14	1150	S	C	NONE	POLY	3-GAL	1	X			dark brown						
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Allen W. Garton / GLEC	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 4.6 °C

Notes/Anomalies/Discrepancies: None

☒ Received on Wet Ice

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10215	SS1010-AT (15cm)	9-17-14	1105	S	C	NONE	POLY	3-GAL	1	X		dark br.							
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Marcel W. Gerton / GLEC	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Marcel W. Gerton		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 5.7 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10316	SS1029-AT (15cm)	9-17-14	0840	S	C	NONE	POLY	3-GAL	1	X			dark br						
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Mallee G. Garton / GLEC	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Mallee W. Garton		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 4.9 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10217	SS 1601 - AT (15cm)	9-17-14	1200	S	C	NONE	ACLY	3-GAL	1	X		dark	br.						
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Mark W Gurton / GLEC	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Mark W Gurton / GLEC		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 5.2 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:
S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACRO INVERTEBRATES								
1	10217	SS 1042-AT (15cm)	9-17-14	0940	S	C	NONE	POLY	3-BAG	1	X		dark br.							
2	10218																			
3	NW 9/18/14																			
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Marlee W. Garton / GLEC	9/18/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Marlee W Garton		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 5.6 °C

Notes/Anomalies/Discrepancies: NDNo

☒ Received on Wet Ice

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10219	SS1009-AT(15cm)	9-18-14	1500	S	C	NONE	POLY	3-GAL	1	X	
2												
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: [signature]		
Print Name & Organization: ~~Kelly Stratton GLE~~			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY
Temperature of Samples: 5.9 °C
☒ Received on Wet Ice
Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Project Name: 40th AVENUE PROJECT

Report Results To: DAVID CONSTANT

Project Number: 193702726.200

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

P.O.#:

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10220	SS1017-AT(15cm)	9-18-14	1400	S	C	NONE	POLY	3-GAL	1	X									
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: Kelly Stratton		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 4.5 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10724	SS1011-AT (15cm)	9-18-14	1440	S	C	NONE	POLY	3-GAL	1	X									
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: [signature]		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 7.2 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10922	SS1031-AT (15cm)	9-18-14	1020	S	C	NONE	POLY	5-GAL	1	X									
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1200	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1200	Signature: Kelly Stratton		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 7.0 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.
COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212
www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC
Report Results To: DAVID CONSTANT
Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901
Phone: 507.529.6045
E-mail: david.constant@stantec.com
Project Name: 40th AVENUE PROJECT
Project Number: 193702726.200
P.O.#:
Sampled by: initials
☐ GLEC ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10223	SS1033-AT (15cm)	9-18-14	0855	S	C	NONE	POLY	5-GAL	1	X			Temp 8.3						
2	10224	SS1034-AT (15cm)	9-18-14	0940	S	C	NONE	POLY	3-GAL	1	X			Temp 9.2						
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1200	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1200	Signature: [signature]	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY
Temperature of Samples: 8.2/8.3 °C
☒ Received on Wet Ice
Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM.

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10226	SS1002-AT (15cm)	9-18-14	1615	S	C	NONE	POLY	3-GAL	1	X									
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 7.9 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	102260	SS1005-AT(15cm)	9-18-14	1535	S	C	NONE	POLY	3-GAL	1	X	
2												
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: 4.0 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies:

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC ☒ Client STANTEC

Requested Analysis

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10254	SS1041-AT (15cm)	9-19-14	0840	S	C	NONE	POLY	3-GAL	1	X	
2	10255	SS1041-BCA (15cm)	9-19-14	0840	S	C	FORMALIN	POLY	1-GAL	1		X
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-22-14	1700	Print Name & Organization: Dan Smith GLEC	9/23/14	1110
Signature: Matthew Pontier	9-22-14	1700	Signature:		
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: 5.4 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies:

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10256	SS1012-AT (15cm)	9-19-14	1145	S	C	NONE	POLY	8-6AL	1	X									
2	10257	SS1012-BTA (15cm)	9-19-14	1145	S	C	FORMALIN	POLY	1-6AL	1		X								
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-22-14	1700	Print Name & Organization: Dan Smith Glec	9/23/14	1110
Signature: Matthew Pontier	9-22-14	1700	Signature:		
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: 5.2 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: GOOD

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

Appendix B1
Overlying Water Quality Summaries

- *Chironomus dilutus*

Project Name: Stantec-St. Louis River
Project Number: 2290-02

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Data Entry

Date	Initials	Data Entered
12/30/2014	MGM	ALL

Data Quality Control

Date	Initials	Data QC'ed
1/19/2015	MLV	100%

Data QC 10%

1/26/2015	DS	All

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: **CS**
GLEC ID: **123**

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Surviva
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
4-Nov-14	0	22.8	7.87	7.5	343	152	120	1.30
		23.0	7.97	7.0	340			
5-Nov-14	1	22.5		4.9				
		22.5		4.6				
6-Nov-14	2	22.1		3.0				
		22.1		3.5				
7-Nov-14	3	22.9		4.1				
		23.0		3.8				
8-Nov-14	4	22.6		3.2				
		22.8		3.7				
9-Nov-14	5	22.6		2.7				
		22.7		3.1				
10-Nov-14	6	23.0		3.9				
		22.9		4.1				
11-Nov-14	7	22.9		3.2				
		23.0		3.2				
12-Nov-14	8	22.6		3.6				
		22.7		3.7				
13-Nov-14	9	22.0		5.1				
		22.1		4.3				
14-Nov-14	10	22.2	7.45	3.4	334	144	108	0.81
		22.3	7.52	3.8	331			
MEAN		**22.6**	**7.70**	**4.1**	**337.0**	**148.0**	**114.0**	**1.06**
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**
Max #		**23.0**	**7.97**	**7.5**	**343**	**152**	**120**	**1.30**
Min #		**22.0**	**7.45**	**2.7**	**331**	**144**	**108**	**0.81**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1022-AT (15CM)
GLEC ID: 10207

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.9	7.90	7.4	332	136	92	0.15	J
		23.0	7.83	7.4	332	132	94	0.13	J
5-Nov-14	1	22.5		5.0					
		22.5		5.2					
6-Nov-14	2	22.1		5.4					
		22.2		5.0					
7-Nov-14	3	22.9		4.4					
		22.8		5.1					
8-Nov-14	4	22.9		4.9					
		22.9		4.9					
9-Nov-14	5	22.7		5.5					
		22.9		4.5					
10-Nov-14	6	22.8		5.1					
		22.8		5.2					
11-Nov-14	7	23.0		4.0					
		23.0		5.0					
12-Nov-14	8	22.8		5.1					
		22.8		5.2					
13-Nov-14	9	23.0		5.0					
		23.0		5.2					
14-Nov-14	10	22.6	7.50	5.5	321	152	100	0.13	J
		22.6	7.57	5.6	315				
MEAN		**22.8**	**7.70**	**5.3**	**325.0**	**140.0**	**95.3**	**0.14**	
N=		**22**	**4**	**22**	**4**	**3**	**3**	**3**	
Max #		**23.0**	**7.90**	**7.4**	**332**	**152**	**100**	**0.15**	
Min #		**22.1**	**7.50**	**4.0**	**315**	**132**	**92**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1024-AT (15CM)
GLEC ID: 10208

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.62	6.3	305	124	98	0.20	J
		22.9	7.62	6.3	308				
5-Nov-14	1	22.5		5.5					
		22.5		5.4					
6-Nov-14	2	22.2		5.5					
		22.1		5.2					
7-Nov-14	3	22.8		5.2					
		22.8		4.9					
8-Nov-14	4	22.9		5.2					
		22.8		5.0					
9-Nov-14	5	22.7		5.0					
		22.7		4.9					
10-Nov-14	6	22.8		5.1					
		22.7		5.2					
11-Nov-14	7	22.9		5.0					
		23.0		3.9					
12-Nov-14	8	22.8		4.7					
		22.8		4.8					
13-Nov-14	9	22.9		4.7					
		22.9		4.9					
14-Nov-14	10	22.4	7.48	4.7	312	148	102	0.14	J
		22.4	7.52	5.4	319	140	100	0.14	J
MEAN		**22.7**	**7.56**	**5.1**	**311.0**	**137.3**	**100.0**	**0.16**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.0**	**7.62**	**6.3**	**319**	**148**	**102**	**0.20**	
Min #		**22.1**	**7.48**	**3.9**	**305**	**124**	**98**	**0.14**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1032-AT (15CM)
GLEC ID: 10209

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.9	7.64	6.5	300	124	90	0.20	J
		22.8	7.60	6.2	299				
5-Nov-14	1	22.5		5.5					
		22.5		5.5					
6-Nov-14	2	22.0		5.6					
		22.2		5.0					
7-Nov-14	3	22.7		5.1					
		22.7		5.4					
8-Nov-14	4	22.8		6.0					
		22.9		5.2					
9-Nov-14	5	22.7		5.4					
		22.9		4.2					
10-Nov-14	6	22.7		5.4					
		22.8		5.4					
11-Nov-14	7	22.9		3.8					
		22.9		4.5					
12-Nov-14	8	22.8		4.5					
		22.8		4.7					
13-Nov-14	9	22.6		5.6					
		22.7		5.1					
14-Nov-14	10	22.3	7.51	5.4	308	136	98	0.13	J
		22.4	7.57	5.5	309				
MEAN		**22.7**	**7.58**	**5.3**	**303.9**	**130.0**	**94.0**	**0.17**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.64**	**6.5**	**309**	**136**	**98**	**0.20**	
Min #		**22.0**	**7.51**	**3.8**	**299**	**124**	**90**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1021-AT (15CM)
GLEC ID: 10210

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.9	7.78	6.6	316	140	98	0.18	J
		22.8	7.77	6.4	317				
5-Nov-14	1	22.4		5.4					
		22.5		5.6					
6-Nov-14	2	22.3		4.8					
		22.3		4.5					
7-Nov-14	3	22.7		5.4					
		22.7		5.2					
8-Nov-14	4	22.9		5.6					
		22.8		5.7					
9-Nov-14	5	22.8		5.0					
		22.8		4.8					
10-Nov-14	6	22.8		4.7					
		22.8		5.1					
11-Nov-14	7	22.9		4.9					
		22.9		4.1					
12-Nov-14	8	22.8		4.9					
		22.9		5.0					
13-Nov-14	9	22.8		5.2					
		22.9		5.1					
14-Nov-14	10	22.3	7.56	5.5	319	140	102	0.14	J
		22.4	7.56	5.4	317				
MEAN		**22.7**	**7.67**	**5.2**	**317.3**	**140.0**	**100.0**	**0.16**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.78**	**6.6**	**319**	**140**	**102**	**0.18**	
Min #		**22.3**	**7.56**	**4.1**	**316**	**140**	**98**	**0.14**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1026-AT (15CM)
GLEC ID: 10212

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.53	6.7	308	124	92	0.27	
		22.9	7.55	6.5	308				
5-Nov-14	1	22.4		5.4					
		22.5		5.4					
6-Nov-14	2	22.3		5.0					
		22.3		4.7					
7-Nov-14	3	22.7		5.5					
		22.7		5.2					
8-Nov-14	4	22.9		4.9					
		22.8		4.4					
9-Nov-14	5	22.7		5.4					
		22.7		4.7					
10-Nov-14	6	22.7		5.0					
		22.6		5.2					
11-Nov-14	7	22.9		3.4					
		23.0		3.6					
12-Nov-14	8	22.8		5.4					
		22.8		4.5					
13-Nov-14	9	22.8		5.4					
		22.8		5.1					
14-Nov-14	10	22.4	7.49	4.4	315	140	100	0.17	J
		22.4	7.57	4.8	313				
MEAN		**22.7**	**7.54**	**5.0**	**311.0**	**132.0**	**96.0**	**0.22**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.0**	**7.57**	**6.7**	**315**	**140**	**100**	**0.27**	
Min #		**22.3**	**7.49**	**3.4**	**308**	**124**	**92**	**0.17**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1028-AT (15CM)
GLEC ID: 10213

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.65	6.2	322	132	108	0.60	
		22.7	7.66	6.0	323				
5-Nov-14	1	22.5		5.0					
		22.5		4.9					
6-Nov-14	2	22.3		4.7					
		22.3		3.8					
7-Nov-14	3	22.7		5.1					
		22.8		5.0					
8-Nov-14	4	22.8		4.1					
		22.7		4.2					
9-Nov-14	5	22.7		4.9					
		22.6		3.8					
10-Nov-14	6	22.6		4.9					
		22.6		5.0					
11-Nov-14	7	22.9		3.4					
		22.8		3.8					
12-Nov-14	8	22.8		4.2					
		22.8		4.2					
13-Nov-14	9	22.7		5.1					
		22.8		4.8					
14-Nov-14	10	22.4	7.66	5.4	324	136	108	0.21	
		22.5	7.71	5.3	318	136	106	0.22	
MEAN		**22.7**	**7.67**	**4.7**	**321.8**	**134.7**	**107.3**	**0.34**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.71**	**6.2**	**324**	**136**	**108**	**0.60**	
Min #		**22.3**	**7.65**	**3.4**	**318**	**132**	**106**	**0.21**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1025-AT (15CM)
GLEC ID: 10214

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.53	6.1	302	124	90	0.33	
		22.9	7.56	6.3	303				
5-Nov-14	1	22.5		5.2					
		22.4		5.4					
6-Nov-14	2	22.3		5.0					
		22.3		4.3					
7-Nov-14	3	22.8		5.2					
		22.8		5.3					
8-Nov-14	4	22.6		5.3					
		22.8		4.8					
9-Nov-14	5	22.6		4.4					
		22.6		4.7					
10-Nov-14	6	22.6		4.9					
		22.7		4.8					
11-Nov-14	7	22.9		3.0					
		22.9		3.4					
12-Nov-14	8	22.7		4.8					
		22.9		4.3					
13-Nov-14	9	22.8		4.6					
		22.9		4.9					
14-Nov-14	10	22.3	7.50	5.4	310	140	98	0.15	J
		22.3	7.54	5.8	310				
MEAN		**22.7**	**7.53**	**4.9**	**306.3**	**132.0**	**94.0**	**0.24**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.56**	**6.3**	**310**	**140**	**98**	**0.33**	
Min #		**22.3**	**7.50**	**3.0**	**302**	**124**	**90**	**0.15**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1010-AT (15CM)
GLEC ID: 10215

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.9	7.64	6.7	307	128	98	0.19	J
		22.8	7.67	6.4	308				
5-Nov-14	1	22.5		5.2					
		22.4		5.1					
6-Nov-14	2	22.2		4.3					
		22.1		4.4					
7-Nov-14	3	22.8		5.2					
		22.8		5.2					
8-Nov-14	4	22.6		5.0					
		22.6		5.2					
9-Nov-14	5	22.5		4.4					
		22.5		4.1					
10-Nov-14	6	22.7		5.2					
		22.6		5.2					
11-Nov-14	7	22.9		4.3					
		22.9		4.5					
12-Nov-14	8	22.5		5.0					
		22.6		3.9					
13-Nov-14	9	22.7		4.3					
		22.7		3.9					
14-Nov-14	10	22.4	7.50	4.8	312	136	102	0.13	J
		22.4	7.49	4.8	312				
MEAN		**22.6**	**7.58**	**4.9**	**309.8**	**132.0**	**100.0**	**0.16**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.67**	**6.7**	**312**	**136**	**102**	**0.19**	
Min #		**22.1**	**7.49**	**3.9**	**307**	**128**	**98**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1029-AT (15CM)
GLEC ID: 10216

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	8.03	6.2	341	156	132	0.45	
		22.8	8.17	5.9	341				
5-Nov-14	1	22.4		4.8					
		22.4		4.6					
6-Nov-14	2	22.3		4.1					
		22.4		4.4					
7-Nov-14	3	22.5		5.2					
		22.6		5.2					
8-Nov-14	4	22.6		4.9					
		22.6		4.9					
9-Nov-14	5	22.3		4.0					
		22.5		4.1					
10-Nov-14	6	22.6		5.0					
		22.6		4.7					
11-Nov-14	7	22.7		5.3					
		22.8		4.3					
12-Nov-14	8	22.6		4.5					
		22.5		5.1					
13-Nov-14	9	22.7		4.2					
		22.7		4.0					
14-Nov-14	10	22.5	7.63	4.1	329	148	108	0.38	
		22.6	7.69	4.2	332				
MEAN		**22.6**	**7.88**	**4.7**	**335.8**	**152.0**	**120.0**	**0.42**	
N=		**22**	**4**	**22**	**4**	**3**	**3**	**3**	
Max #		**22.8**	**8.17**	**6.2**	**341**	**156**	**132**	**0.45**	
Min #		**22.3**	**7.63**	**4.0**	**329**	**148**	**108**	**0.38**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1001-AT (15CM)
GLEC ID: 10217

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.2	7.67	6.8	309	136	96	0.28	
		22.3	7.63	6.3	308				
5-Nov-14	1	22.2		5.2					
		22.2		5.3					
6-Nov-14	2	22.1		4.0					
		22.2		4.2					
7-Nov-14	3	22.4		5.2					
		22.4		4.8					
8-Nov-14	4	22.9		5.0					
		22.9		5.2					
9-Nov-14	5	23.5		5.1					
		23.5		5.2					
10-Nov-14	6	23.3		4.9					
		23.2		4.9					
11-Nov-14	7	23.3		3.3					
		23.6		4.3					
12-Nov-14	8	22.1		6.1					
		22.3		5.7					
13-Nov-14	9	22.3		4.7					
		22.3		5.2					
14-Nov-14	10	22.8	7.48	4.8	314	144	100	0.16	J
		22.9	7.56	5.3	313				
MEAN		**22.7**	**7.59**	**5.1**	**311.0**	**140.0**	**98.0**	**0.22**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.67**	**6.8**	**314**	**144**	**100**	**0.28**	
Min #		**22.1**	**7.48**	**3.3**	**308**	**136**	**96**	**0.16**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1042-AT (15CM)
GLEC ID: 10218

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.69	6.1	364	140	124	0.70	
		22.4	7.73	6.1	342				
5-Nov-14	1	22.2		5.6					
		22.3		5.1					
6-Nov-14	2	22.2		4.3					
		22.3		4.2					
7-Nov-14	3	22.4		4.7					
		22.3		4.0					
8-Nov-14	4	23.4		4.7					
		23.5		4.2					
9-Nov-14	5	22.9		4.8					
		23.3		4.3					
10-Nov-14	6	23.3		5.0					
		23.3		4.9					
11-Nov-14	7	23.5		3.2					
		23.6		3.5					
12-Nov-14	8	22.3		4.1					
		22.4		4.4					
13-Nov-14	9	22.7		4.3					
		22.8		4.0					
14-Nov-14	10	22.8	7.99	4.0	350	160	122	0.73	
		23.1	7.93	4.0	345				
MEAN		**22.8**	**7.84**	**4.5**	**350.3**	**150.0**	**123.0**	**0.72**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.99**	**6.1**	**364**	**160**	**124**	**0.73**	
Min #		**22.2**	**7.69**	**3.2**	**342**	**140**	**122**	**0.70**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1009-AT (15CM)
GLEC ID: 10219

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.65	6.6	298	132	96	0.15	J
		22.4	7.69	6.5	298				
5-Nov-14	1	22.2		4.9					
		22.3		5.2					
6-Nov-14	2	22.4		4.8					
		22.4		4.9					
7-Nov-14	3	22.3		4.5					
		22.3		4.9					
8-Nov-14	4	23.4		5.3					
		23.4		5.4					
9-Nov-14	5	23.2		6.0					
		23.4		5.4					
10-Nov-14	6	23.2		5.2					
		23.2		5.3					
11-Nov-14	7	23.4		4.5					
		23.6		3.8					
12-Nov-14	8	22.3		4.9					
		22.4		4.3					
13-Nov-14	9	22.6		4.3					
		22.6		4.2					
14-Nov-14	10	22.8	7.49	4.5	311	136	98	0.17	J
		22.8	7.52	5.0	311				
MEAN		**22.8**	**7.59**	**5.0**	**304.5**	**134.0**	**97.0**	**0.16**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.69**	**6.6**	**311**	**136**	**98**	**0.17**	
Min #		**22.2**	**7.49**	**3.8**	**298**	**132**	**96**	**0.15**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1017-AT (15CM)
GLEC ID: 10220

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.56	6.5	306	132	96	0.25	
		22.3	7.58	6.1	304				
5-Nov-14	1	22.2		4.9					
		22.2		4.7					
6-Nov-14	2	22.3		4.7					
		22.4		5.3					
7-Nov-14	3	22.3		5.1					
		22.3		5.0					
8-Nov-14	4	23.4		5.1					
		23.5		5.2					
9-Nov-14	5	23.4		5.5					
		23.5		5.5					
10-Nov-14	6	23.3		5.0					
		23.3		5.0					
11-Nov-14	7	23.6		3.8					
		23.7		3.9					
12-Nov-14	8	22.4		4.4					
		22.4		4.3					
13-Nov-14	9	22.6		3.9					
		22.6		4.3					
14-Nov-14	10	22.8	7.48	4.8	312	128	98	0.16	J
		22.8	7.46	4.3	309				
MEAN		**22.8**	**7.52**	**4.9**	**307.8**	**130.0**	**97.0**	**0.21**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.7**	**7.58**	**6.5**	**312**	**132**	**98**	**0.25**	
Min #		**22.2**	**7.46**	**3.8**	**304**	**128**	**96**	**0.16**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1011-AT (15CM)
GLEC ID: 10221

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.70	6.4	306	120	96	0.16	J
		22.3	7.70	6.3	308				
5-Nov-14	1	22.2		5.8					
		22.3		5.6					
6-Nov-14	2	22.3		5.9					
		22.3		5.9					
7-Nov-14	3	22.3		5.8					
		22.2		6.0					
8-Nov-14	4	23.1		5.7					
		23.3		5.7					
9-Nov-14	5	23.3		5.8					
		23.3		5.8					
10-Nov-14	6	23.2		5.1					
		23.2		5.2					
11-Nov-14	7	23.6		4.2					
		23.6		4.8					
12-Nov-14	8	22.4		4.6					
		22.4		4.5					
13-Nov-14	9	22.7		4.1					
		22.6		4.0					
14-Nov-14	10	23.0	7.51	4.7	313	140	98	0.14	J
		22.9	7.59	5.0	312				
MEAN		**22.8**	**7.63**	**5.3**	**309.8**	**130.0**	**97.0**	**0.15**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.70**	**6.4**	**313**	**140**	**98**	**0.16**	
Min #		**22.2**	**7.51**	**4.0**	**306**	**120**	**96**	**0.14**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1031-AT (15CM)
GLEC ID: 10222

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.3	7.51	6.0	300	132	96	0.28	
		22.4	7.60	6.2	303	124	96	0.28	
5-Nov-14	1	22.3		5.6					
		22.2		5.9					
6-Nov-14	2	22.4		4.2					
		22.4		4.6					
7-Nov-14	3	22.3		5.2					
		22.2		5.5					
8-Nov-14	4	23.5		5.0					
		23.4		5.1					
9-Nov-14	5	23.3		5.3					
		23.4		5.1					
10-Nov-14	6	23.2		5.4					
		23.3		5.4					
11-Nov-14	7	23.5		5.2					
		23.6		5.4					
12-Nov-14	8	22.4		4.2					
		22.4		4.4					
13-Nov-14	9	22.7		4.3					
		22.7		4.5					
14-Nov-14	10	22.7	7.39	3.6	306	132	96	0.16	J
		22.6	7.46	4.3	304				
MEAN		**22.8**	**7.49**	**5.0**	**303.3**	**129.3**	**96.0**	**0.24**	
N=		**22**	**4**	**22**	**4**	**4**	**4**	**4**	
Max #		**23.6**	**7.60**	**6.2**	**306**	**132**	**96**	**0.28**	
Min #		**22.2**	**7.39**	**3.6**	**300**	**124**	**96**	**0.16**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1033-AT (15CM)
GLEC ID: 10223

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.3	7.32	5.8	301	124	86	0.33	
		22.4	7.34	5.1	303				
5-Nov-14	1	22.2		5.1					
		22.2		4.8					
6-Nov-14	2	22.3		5.4					
		22.4		4.4					
7-Nov-14	3	22.2		4.9					
		22.2		4.7					
8-Nov-14	4	23.3		4.9					
		23.4		4.9					
9-Nov-14	5	22.9		6.2					
		23.1		5.4					
10-Nov-14	6	23.4		4.9					
		23.4		4.6					
11-Nov-14	7	23.5		3.7					
		23.5		4.3					
12-Nov-14	8	22.3		4.1					
		22.4		3.4					
13-Nov-14	9	22.7		3.6					
		22.7		3.3					
14-Nov-14	10	22.8	7.57	3.7	323	140	104	0.19	J
		22.8	7.81	3.9	326				
MEAN		**22.7**	**7.51**	**4.6**	**313.3**	**132.0**	**95.0**	**0.26**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.5**	**7.81**	**6.2**	**326**	**140**	**104**	**0.33**	
Min #		**22.2**	**7.32**	**3.3**	**301**	**124**	**86**	**0.19**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1034-AT (15CM)
GLEC ID: 10224

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.25	5.7	319	120	100	2.68	
		22.4	7.33	5.6	319				
5-Nov-14	1	22.2		4.9					
		22.3		4.9					
6-Nov-14	2	22.4		4.9					
		22.5		4.8					
7-Nov-14	3	22.2		4.7					
		22.2		4.6					
8-Nov-14	4	23.3		5.2					
		23.4		4.4					
9-Nov-14	5	23.4		4.3					
		23.5		4.5					
10-Nov-14	6	23.4		4.6					
		23.5		4.7					
11-Nov-14	7	23.5		4.0					
		23.5		4.6					
12-Nov-14	8	22.3		5.0					
		22.4		4.6					
13-Nov-14	9	22.6		4.1					
		22.6		4.4					
14-Nov-14	10	22.8	7.28	4.3	305	124	90	0.30	
		23.2	7.41	4.2	303				
MEAN		**22.8**	**7.32**	**4.7**	**311.5**	**122.0**	**95.0**	**1.49**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.5**	**7.41**	**5.7**	**319**	**124**	**100**	**2.68**	
Min #		**22.2**	**7.25**	**4.0**	**303**	**120**	**90**	**0.30**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1002-AT (15CM)
GLEC ID: 10225

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.37	5.8	291	120	88	0.65	
		22.3	7.37	5.8	289				
5-Nov-14	1	22.2		5.3					
		22.2		5.6					
6-Nov-14	2	22.5		5.1					
		22.6		4.3					
7-Nov-14	3	22.2		4.8					
		22.2		4.9					
8-Nov-14	4	23.5		4.8					
		23.6		4.8					
9-Nov-14	5	23.4		5.3					
		23.4		4.6					
10-Nov-14	6	23.5		4.7					
		23.5		4.9					
11-Nov-14	7	23.3		4.2					
		23.4		4.2					
12-Nov-14	8	22.3		4.9					
		22.3		5.1					
13-Nov-14	9	22.5		4.5					
		22.6		4.0					
14-Nov-14	10	23.1	7.56	4.9	318	132	100	0.22	
		23.3	7.60	5.1	314				
MEAN		**22.8**	**7.48**	**4.9**	**302.9**	**126.0**	**94.0**	**0.44**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.60**	**5.8**	**318**	**132**	**100**	**0.65**	
Min #		**22.2**	**7.37**	**4.0**	**289**	**120**	**88**	**0.22**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1005-AT (15CM)
GLEC ID: 10226

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.62	6.2	299	120	94	0.24	
		22.4	7.66	6.2	301				
5-Nov-14	1	22.2		5.3					
		22.2		5.3					
6-Nov-14	2	22.5		5.2					
		22.5		5.3					
7-Nov-14	3	22.2		5.0					
		22.2		5.3					
8-Nov-14	4	23.5		5.6					
		23.5		5.2					
9-Nov-14	5	23.3		5.3					
		23.5		5.5					
10-Nov-14	6	23.5		4.9					
		23.4		5.5					
11-Nov-14	7	23.4		4.3					
		23.5		4.5					
12-Nov-14	8	22.3		5.4					
		22.3		4.3					
13-Nov-14	9	22.5		3.4					
		22.5		3.7					
14-Nov-14	10	23.0	7.50	5.5	307	144	98	0.13	J
		23.2	7.51	5.3	311				
MEAN		**22.8**	**7.57**	**5.1**	**304.5**	**132.0**	**96.0**	**0.19**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.5**	**7.66**	**6.2**	**311**	**144**	**98**	**0.24**	
Min #		**22.2**	**7.50**	**3.4**	**299**	**120**	**94**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1041-AT (15CM)
GLEC ID: 10254

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.82	6.9	328	136	110	0.46	
		22.4	7.87	6.9	331				
5-Nov-14	1	22.3		5.9					
		22.2		5.6					
6-Nov-14	2	22.5		6.0					
		22.6		5.6					
7-Nov-14	3	22.2		6.0					
		22.2		5.9					
8-Nov-14	4	23.5		5.5					
		23.6		5.7					
9-Nov-14	5	23.4		5.8					
		23.5		5.6					
10-Nov-14	6	23.5		5.6					
		23.3		5.5					
11-Nov-14	7	23.3		5.7					
		23.5		4.4					
12-Nov-14	8	22.3		5.2					
		22.4		4.8					
13-Nov-14	9	22.6		6.0					
		22.6		6.1					
14-Nov-14	10	23.1	7.48	5.2	310	144	98	0.15	J
		23.1	7.54	4.8	313				
MEAN		**22.8**	**7.68**	**5.7**	**320.5**	**140.0**	**104.0**	**0.31**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.6**	**7.87**	**6.9**	**331**	**144**	**110**	**0.46**	
Min #		**22.2**	**7.48**	**4.4**	**310**	**136**	**98**	**0.15**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: SS 1012-AT (15CM)
GLEC ID: 10256

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.23	6.5	261	108	74	1.33	
		22.4	7.22	6.5	265				
5-Nov-14	1	22.2		6.0					
		22.2		5.9					
6-Nov-14	2	22.5		6.0					
		22.5		5.7					
7-Nov-14	3	22.2		6.0					
		22.2		6.0					
8-Nov-14	4	23.4		6.3					
		23.4		6.3					
9-Nov-14	5	23.3		6.0					
		23.3		6.2					
10-Nov-14	6	23.3		5.7					
		23.3		6.2					
11-Nov-14	7	23.3		5.9					
		23.3		5.4					
12-Nov-14	8	22.4		5.4					
		22.4		5.4					
13-Nov-14	9	22.5		6.0					
		22.5		6.5					
14-Nov-14	10	23.0	7.36	6.5	290	124	88	0.23	
		22.9	7.35	5.8	293				
MEAN		**22.8**	**7.29**	**6.0**	**277.2**	**116.0**	**81.0**	**0.78**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.4**	**7.36**	**6.5**	**293**	**124**	**88**	**1.33**	
Min #		**22.2**	**7.22**	**5.4**	**261**	**108**	**74**	**0.23**	

Ammonia
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-02
Sample ID: Secondary Control
GLEC ID: Water Only

Test Dates: November 04-14, 2014
Test Type: 10 Day Whole Sediment Toxicity Survival and Reproduction
Test Species: *Chironomus dilutus*

Date	Test Day	Temperatur (°C)	pH (s.u.)	D.O. (mg/L)	onductivit (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.9	8.15	8.2	307	140	100	0.10	J
		23.0	8.16	8.4	308				
5-Nov-14	1	22.5		6.1					
		22.5		6.4					
6-Nov-14	2	22.2		5.5					
		22.2		5.5					
7-Nov-14	3	22.9		4.4					
		22.9		4.9					
8-Nov-14	4	22.9		5.7					
		23.0		6.1					
9-Nov-14	5	22.7		6.0					
		22.9		5.9					
10-Nov-14	6	22.8		5.5					
		22.8		5.7					
11-Nov-14	7	23.1		5.2					
		23.1		5.3					
12-Nov-14	8	22.7		6.0					
		22.9		5.8					
13-Nov-14	9	23.1		5.1					
		23.1		4.5					
14-Nov-14	10	22.3	7.66	6.0	315	136	106	0.49	
		22.6	7.67	6.0	314				
MEAN		**22.8**	**7.91**	**5.8**	**311.0**	**138.0**	**103.0**	**0.30**	
N=		**22**	**4**	**22**	**4**	**2**	**2**	**2**	
Max #		**23.1**	**8.16**	**8.4**	**315**	**140**	**106**	**0.49**	
Min #		**22.2**	**7.66**	**4.4**	**307**	**136**	**100**	**0.10**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Appendix B2
Overlying Water Quality Summaries

- *Hyalella azteca*

Project Name: Stantec St. Louis River
Project Numbe 2290-01

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sedimen
Test Species: Hyalella azteca

Data Entry

Date	Initials	Data Entered
1/15/2015	MLV	all daily chem data

Data QC 100%

Date	Initials	Data QCd
1/23/2015	DS	All

Data QC 10%

Date	Initials	Data QCd
1/27/2015	MGM	All inc Ammonia

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: Laboratory Control
GLC ID: CS 124

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.76	6.0	353.0	152	120	1.30	
		22.5	7.79	6.0	343.0				
5-Nov-14	1	22.8	7.74	5.4					
		22.9	7.77	5.8					
6-Nov-14	2	22.6		5.9					
		22.7		6.0					
7-Nov-14	3	22.3	7.88	5.9					
		22.3	7.91	6.2					
8-Nov-14	4	22.9		6.4					
		22.8		6.4					
9-Nov-14	5	22.8		5.7					
		22.8		5.7					
10-Nov-14	6	22.4	7.79	6.3	324.0				
		22.5	7.85	6.5	324.0				
11-Nov-14	7	22.9		5.4					
		23.0		5.7					
12-Nov-14	8	22.4	7.72	5.7					
		22.5	7.71	5.9					
13-Nov-14	9	22.8		6.1					
		22.8		6.0					
14-Nov-14	10	22.6	7.71	5.4					
		22.7	7.82	5.7					
15-Nov-14	11	22.8		5.7					
		22.8		5.8					
16-Nov-14	12	22.8		5.8					
		22.7		5.8					
17-Nov-14	13	22.6	8.16	6.4	338.0				
		22.5	8.20	6.5	335.0				
18-Nov-14	14	22.5		5.0					
		22.7		5.5					
19-Nov-14	15	22.6	7.93	5.7					
		22.6	7.95	6.6					
20-Nov-14	16	22.4		4.8					
		22.5		5.2					
21-Nov-14	17	22.4	7.78	5.5					
		22.5	8.14	5.6					
22-Nov-14	18	22.4		5.6					
		22.5		4.8					
23-Nov-14	19	22.3		5.8					
		22.5		6.3					
24-Nov-14	20	22.5	7.83	4.9	332.0				
		22.7	7.78	5.4	325.0				
25-Nov-14	21	22.4		5.6					
		22.4		5.1					
26-Nov-14	22	22.4	7.65	5.5					
		22.5	7.85	5.6					
27-Nov-14	23	22.4		5.7					
		22.4		5.4					
28-Nov-14	24	22.1	7.75	6.2					
		22.1	7.80	6.4					
29-Nov-14	25	22.3		6.1					
		22.3		5.8					
30-Nov-14	26	22.4		6.2					
		22.4		6.5					
1-Dec-14	27	22.1	7.69	5.7	328.0				
		22.1	7.79	6.5	313.0				
2-Dec-14	28	22.6	7.74	6.0	321.0	132	106	0.11	J
		22.6	7.73	6.3	323.0				
Mean		**22.5**	**7.83**	**5.8**	**330**	**142**	**113**	**0.71**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.0**	**8.20**	**6.6**	**353**	**152**	**120**	**1.30**	
Min#		**22.1**	**7.65**	**4.8**	**313**	**132**	**106**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: Water Only
GLC ID: Secondary Control

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	8.04	7.7	307.0	140	100	0.10	J
		22.6	8.13	8.0	308.0				
5-Nov-14	1	23.0	7.94	7.0					
		23.1	7.96	7.1					
6-Nov-14	2	22.8		7.1					
		22.8		7.4					
7-Nov-14	3	22.3	8.02	7.2					
		22.3	8.04	7.0					
8-Nov-14	4	22.8		7.2					
		22.9		7.3					
9-Nov-14	5	22.8		6.9					
		22.9		7.2					
10-Nov-14	6	22.4	8.09	7.2	313.0				
		22.4	8.01	7.6	312.0				
11-Nov-14	7	23.0		7.1					
		23.1		7.1					
12-Nov-14	8	22.7	7.83	6.7					
		22.8	7.88	6.8					
13-Nov-14	9	22.8		7.3					
		22.8		7.6					
14-Nov-14	10	22.5	7.85	7.1					
		22.8	7.84	7.0					
15-Nov-14	11	22.8		6.8					
		22.9		6.9					
16-Nov-14	12	22.8		7.0					
		22.8		7.0					
17-Nov-14	13	22.6	7.98	7.3	310.0				
		22.8	7.98	7.3	313.0				
18-Nov-14	14	22.7		6.8					
		22.8		6.9					
19-Nov-14	15	22.5	7.77	6.9					
		22.7	7.79	6.9					
20-Nov-14	16	22.6		6.2					
		22.7		6.3					
21-Nov-14	17	22.5	7.76	6.2					
		22.8	7.77	6.2					
22-Nov-14	18	22.5		6.3					
		22.5		6.3					
23-Nov-14	19	22.5		7.1					
		22.6		6.6					
24-Nov-14	20	22.8	7.78	6.2	310.0				
		22.9	7.80	6.3	312.0				
25-Nov-14	21	22.6		6.6					
		22.6		6.9					
26-Nov-14	22	22.5	7.89	6.8					
		22.6	7.88	6.9					
27-Nov-14	23	22.5		7.1					
		22.4		7.0					
28-Nov-14	24	22.3	8.07	7.5					
		22.3	8.06	7.6					
29-Nov-14	25	22.5		5.5					
		22.4		5.7					
30-Nov-14	26	22.5		6.6					
		22.7		7.4					
1-Dec-14	27	22.2	8.09	7.7	309.0				
		22.2	8.09	8.0	307.0				
2-Dec-14	28	22.8	7.92	7.0	313.0	144	100	0.11	J
		22.7	7.98	7.1	315.0				
Mean		**22.7**	**7.94**	**7.0**	**311**	**142**	**100**	**0.11**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.13**	**8.0**	**315**	**144**	**100**	**0.11**	
Min#		**22.2**	**7.76**	**5.5**	**307**	**140**	**100**	**0.10**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1022-AT
GLC ID: 10207

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.4	7.68	6.7	333.0	136	92	0.15	J
		22.7	7.62	6.4	330.0	132	94	0.13	J
5-Nov-14	1	23.1	7.67	5.4					
		22.9	7.69	5.5					
6-Nov-14	2	22.7		6.5					
		22.8		6.6					
7-Nov-14	3	22.4	7.81	5.6					
		22.4	7.84	5.8					
8-Nov-14	4	22.8		6.3					
		22.8		6.4					
9-Nov-14	5	22.8		6.7					
		22.8		6.5					
10-Nov-14	6	22.4	7.76	7.1	321.0				
		22.4	7.76	6.9	320.0				
11-Nov-14	7	23.0		5.9					
		23.0		6.1					
12-Nov-14	8	22.7	7.64	6.2					
		22.7	7.67	6.5					
13-Nov-14	9	22.5		7.5					
		22.6		7.2					
14-Nov-14	10	22.8	7.68	6.6					
		22.8	7.72	6.5					
15-Nov-14	11	22.9		6.2					
		22.9		6.1					
16-Nov-14	12	22.8		6.4					
		22.8		6.5					
17-Nov-14	13	22.6	7.75	6.7	317.0				
		22.6	7.76	6.8	317.0				
18-Nov-14	14	22.7		7.0					
		22.8		6.6					
19-Nov-14	15	22.5	7.64	6.5					
		22.5	7.71	5.9					
20-Nov-14	16	22.7		6.4					
		22.8		6.2					
21-Nov-14	17	22.7	7.80	6.7					
		22.8	7.83	6.9					
22-Nov-14	18	22.6		6.3					
		22.7		6.4					
23-Nov-14	19	22.6		6.8					
		22.7		6.4					
24-Nov-14	20	22.8	7.71	6.3	312.0				
		22.9	7.74	5.8	315.0				
25-Nov-14	21	22.5		7.1					
		22.7		6.9					
26-Nov-14	22	22.5	7.81	6.9					
		22.5	7.73	6.5					
27-Nov-14	23	22.6		7.0					
		22.6		7.3					
28-Nov-14	24	22.3	7.89	7.1					
		22.3	7.91	7.1					
29-Nov-14	25	22.4		6.3					
		22.5		6.2					
30-Nov-14	26	22.7		7.1					
		22.7		7.2					
1-Dec-14	27	22.2	7.89	7.1	308.0				
		22.1	7.97	7.5	310.0				
2-Dec-14	28	22.8	7.89	6.4	314.0	136	104	0.12	J
		22.8	7.88	6.8	314.0				
Mean		**22.7**	**7.77**	**6.6**	**318**	**135**	**97**	**0.13**	
Number		**58**	**28**	**58**	**12**	**3**	**3**	**3**	
Max #		**23.1**	**7.97**	**7.5**	**333**	**136**	**104**	**0.15**	
Min#		**22.1**	**7.62**	**5.4**	**308**	**132**	**92**	**0.12**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1024-AT
GLC ID: 10208

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.58	6.6	306.0	124	98	0.20	J
		22.5	7.59	6.4	306.0				
5-Nov-14	1	23.1	7.53	6.1					
		23.1	7.49	6.0					
6-Nov-14	2	22.8		6.0					
		22.7		6.2					
7-Nov-14	3	22.3	7.64	5.6					
		22.3	7.65	5.4					
8-Nov-14	4	22.7		6.4					
		22.7		6.2					
9-Nov-14	5	22.7		6.7					
		22.6		6.5					
10-Nov-14	6	22.4	7.70	6.8	313.0				
		22.4	7.71	6.7	312.0				
11-Nov-14	7	23.1		6.9					
		23.1		6.8					
12-Nov-14	8	22.6	7.61	6.3					
		22.7	7.67	6.3					
13-Nov-14	9	22.5		7.3					
		22.5		7.2					
14-Nov-14	10	22.8	7.63	6.4					
		22.8	7.71	6.6					
15-Nov-14	11	22.8		6.7					
		22.8		6.7					
16-Nov-14	12	22.8		6.3					
		22.6		6.6					
17-Nov-14	13	22.6	7.72	6.6	315.0				
		22.7	7.79	6.6	315.0				
18-Nov-14	14	22.7		6.6					
		22.6		6.9					
19-Nov-14	15	22.5	7.72	6.5					
		22.5	7.68	6.5					
20-Nov-14	16	22.7		6.2					
		22.7		6.4					
21-Nov-14	17	22.6	7.83	7.4					
		22.8	7.74	6.7					
22-Nov-14	18	22.6		7.1					
		22.6		7.2					
23-Nov-14	19	22.6		6.8					
		22.7		6.3					
24-Nov-14	20	22.9	7.64	5.3	313.0				
		23.0	7.64	5.6	316.0				
25-Nov-14	21	22.8		7.1					
		22.5		6.9					
26-Nov-14	22	22.5	7.69	6.6					
		22.5	7.64	6.5					
27-Nov-14	23	22.7		7.1					
		22.7		7.1					
28-Nov-14	24	22.3	7.91	7.4					
		22.3	7.82	7.0					
29-Nov-14	25	22.5		6.7					
		22.4		6.5					
30-Nov-14	26	22.7		7.4					
		22.7		7.3					
1-Dec-14	27	22.2	7.86	7.4	305.0				
		22.1	7.93	7.6	309.0				
2-Dec-14	28	22.6	7.82	7.0	311.0	136	106	0.13	
		22.6	7.82	7.1	312.0				
Mean		**22.6**	**7.71**	**6.6**	**311**	**130**	**102**	**0.17**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**7.93**	**7.6**	**316**	**136**	**106**	**0.20**	
Min#		**22.1**	**7.49**	**5.3**	**305**	**124**	**98**	**0.13**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1032-AT
GLC ID: 10209

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.62	6.5	301.0	124	90	0.20	J
		22.4	7.62	6.5	301.0				
5-Nov-14	1	23.1	7.62	6.3					
		23.0	7.67	6.2					
6-Nov-14	2	22.8		6.4					
		22.8		6.3					
7-Nov-14	3	22.1	7.80	6.5					
		22.2	7.84	6.6					
8-Nov-14	4	22.7		6.5					
		22.7		6.5					
9-Nov-14	5	22.7		6.9					
		22.7		6.8					
10-Nov-14	6	22.4	7.78	6.7	309.0				
		22.4	7.84	6.8	307.0				
11-Nov-14	7	23.0		6.7					
		23.0		6.8					
12-Nov-14	8	22.6	7.64	6.6					
		22.7	7.72	6.4					
13-Nov-14	9	22.4		7.6					
		22.5		7.6					
14-Nov-14	10	22.8	7.72	6.6					
		22.8	7.72	6.4					
15-Nov-14	11	22.8		6.8					
		22.9		6.7					
16-Nov-14	12	22.8		6.6					
		22.7		6.6					
17-Nov-14	13	22.5	7.88	6.6	310.0				
		22.7	7.93	6.7	312.0				
18-Nov-14	14	22.6		7.0					
		22.7		6.8					
19-Nov-14	15	22.6	7.86	6.5					
		22.6	7.82	6.8					
20-Nov-14	16	22.8		6.4					
		22.8		6.6					
21-Nov-14	17	22.7	7.92	7.0					
		22.8	7.90	7.2					
22-Nov-14	18	22.7		7.1					
		22.7		7.0					
23-Nov-14	19	22.6		6.8					
		22.7		6.6					
24-Nov-14	20	22.8	7.79	6.4	309.0				
		22.9	7.81	6.0	314.0				
25-Nov-14	21	22.8		7.1					
		22.8		7.1					
26-Nov-14	22	22.5	7.85	6.6					
		22.6	7.90	6.6					
27-Nov-14	23	22.7		7.3					
		22.7		7.6					
28-Nov-14	24	22.6	8.05	7.6					
		22.6	8.03	7.5					
29-Nov-14	25	22.8		7.1					
		22.8		6.6					
30-Nov-14	26	22.8		7.6					
		22.8		7.6					
1-Dec-14	27	22.5	7.98	7.0	306.0				
		22.5	8.04	6.9	311.0				
2-Dec-14	28	22.6	8.01	7.2	314.0	136	102	0.14	
		22.6	8.04	7.0	315.0				
Mean		**22.7**	**7.84**	**6.8**	**309**	**130**	**96**	**0.17**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.05**	**7.6**	**315**	**136**	**102**	**0.20**	
Min#		**22.1**	**7.62**	**6.0**	**301**	**124**	**90**	**0.14**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1021-AT
GLC ID: 10210

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.74	6.6	317.0	140	98	0.18	J
		22.5	7.79	6.5	316.0				
5-Nov-14	1	23.1	7.75	6.6					
		23.1	7.84	6.8					
6-Nov-14	2	22.7		6.5					
		22.8		6.4					
7-Nov-14	3	22.1	7.82	6.0					
		22.1	7.81	5.3					
8-Nov-14	4	22.8		6.5					
		22.7		6.4					
9-Nov-14	5	22.7		6.7					
		22.8		6.7					
10-Nov-14	6	22.4	7.82	6.7	312.0				
		22.4	7.88	6.8	312.0				
11-Nov-14	7	23.0		6.8					
		23.0		6.9					
12-Nov-14	8	22.6	7.76	6.7					
		22.7	7.71	6.1					
13-Nov-14	9	22.6		8.0					
		22.6		7.5					
14-Nov-14	10	22.7	7.81	6.9					
		22.8	7.82	6.8					
15-Nov-14	11	22.7		7.0					
		22.8		6.7					
16-Nov-14	12	22.7		6.5					
		22.6		6.6					
17-Nov-14	13	22.6	7.97	6.8	317.0				
		22.6	7.96	6.9	315.0				
18-Nov-14	14	22.5		7.2					
		22.6		7.0					
19-Nov-14	15	22.6	7.88	6.8					
		22.5	7.92	6.6					
20-Nov-14	16	22.8		6.7					
		22.8		6.8					
21-Nov-14	17	22.8	7.87	6.8					
		22.8	7.90	6.9					
22-Nov-14	18	22.6		7.0					
		22.7		6.5					
23-Nov-14	19	22.6		6.8					
		22.6		6.9					
24-Nov-14	20	22.8	7.86	6.2	313.0				
		22.9	7.95	6.6	316.0				
25-Nov-14	21	22.8		7.1					
		22.8		7.3					
26-Nov-14	22	22.6	7.86	6.6					
		22.6	7.99	6.8					
27-Nov-14	23	22.8		7.7					
		22.7		7.6					
28-Nov-14	24	22.5	8.07	7.3					
		22.5	8.07	7.3					
29-Nov-14	25	22.6		7.0					
		22.6		7.3					
30-Nov-14	26	TE		TE					
		TE		TE					
1-Dec-14	27	22.4	8.09	7.5	306.0				
		22.5	8.10	7.6	313.0				
2-Dec-14	28	22.6	8.09	7.4	314.0	148	104	0.15	J
		22.7	8.12	7.3	314.0				
Mean		**22.7**	**7.90**	**6.8**	**314**	**144**	**101**	**0.17**	
Number		**56**	**28**	**56**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.12**	**8.0**	**317**	**148**	**104**	**0.18**	
Min#		**22.1**	**7.71**	**5.3**	**306**	**140**	**98**	**0.15**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1026-AT
GLC ID: 10212

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.53	6.4	307.0	124	92	0.27	
		22.5	7.53	6.1	306.0				
5-Nov-14	1	23.0	7.55	6.6					
		23.0	7.56	6.5					
6-Nov-14	2	22.5		6.6					
		22.7		6.3					
7-Nov-14	3	22.2	7.73	6.7					
		22.2	7.72	6.6					
8-Nov-14	4	22.7		6.5					
		22.7		6.6					
9-Nov-14	5	22.8		6.6					
		22.8		6.4					
10-Nov-14	6	22.4	7.83	6.8	311.0				
		22.4	7.79	6.8	312.0				
11-Nov-14	7	23.1		6.2					
		23.1		6.4					
12-Nov-14	8	22.6	7.75	6.1					
		22.7	7.71	5.7					
13-Nov-14	9	22.6		7.9					
		22.6		7.7					
14-Nov-14	10	22.7	7.91	6.7					
		22.7	7.92	6.8					
15-Nov-14	11	22.8		6.8					
		23.0		6.3					
16-Nov-14	12	22.8		6.0					
		22.8		5.9					
17-Nov-14	13	22.6	8.10	6.5	320.0				
		22.6	8.25	6.4	324.0				
18-Nov-14	14	22.6		6.3					
		22.6		6.3					
19-Nov-14	15	22.4	8.23	6.4					
		22.4	8.21	6.5					
20-Nov-14	16	22.7		5.9					
		22.8		5.4					
21-Nov-14	17	22.8	8.29	6.8					
		22.8	8.16	6.3					
22-Nov-14	18	22.7		6.6					
		22.8		6.1					
23-Nov-14	19	22.8		5.9					
		22.8		5.9					
24-Nov-14	20	22.9	8.31	5.8	338.0				
		22.9	8.24	5.3	334.0				
25-Nov-14	21	22.9		6.9					
		22.9		6.1					
26-Nov-14	22	22.4	8.21	6.4					
		22.5	8.21	6.7					
27-Nov-14	23	22.8		7.5					
		22.8		7.1					
28-Nov-14	24	22.6	8.22	6.8					
		22.6	8.15	6.4					
29-Nov-14	25	22.5		7.4					
		22.6		7.0					
30-Nov-14	26	22.9		7.1					
		22.9		7.3					
1-Dec-14	27	22.5	8.12	7.2	330.0				
		22.6	8.17	6.8	325.0				
2-Dec-14	28	22.6	8.10	7.4	329.0	148	108	0.13	J
		22.6	8.00	7.0	326.0				
Mean		**22.7**	**7.98**	**6.5**	**322**	**136**	**100**	**0.20**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.31**	**7.9**	**338**	**148**	**108**	**0.27**	
Min#		**22.2**	**7.53**	**5.3**	**306**	**124**	**92**	**0.13**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1028-AT
GLC ID: 10213

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.59	6.2	317.0	132	108	0.60	
		22.5	7.64	6.1	319.0				
5-Nov-14	1	23.1	7.61	6.2					
		23.1	7.64	6.0					
6-Nov-14	2	22.6		6.5					
		22.6		5.9					
7-Nov-14	3	22.2	7.74	6.5					
		22.2	7.68	6.4					
8-Nov-14	4	22.7		5.4					
		22.7		6.2					
9-Nov-14	5	22.7		6.7					
		22.8		6.0					
10-Nov-14	6	22.4	7.77	6.8	314.0				
		22.5	7.84	6.7	312.0				
11-Nov-14	7	23.0		6.0					
		23.0		6.1					
12-Nov-14	8	22.6	7.97	5.9					
		22.5	8.04	5.9					
13-Nov-14	9	22.6		7.6					
		22.6		7.4					
14-Nov-14	10	22.7	8.49	5.5					
		22.7	8.53	5.9					
15-Nov-14	11	22.9		5.9					
		23.0		5.7					
16-Nov-14	12	22.8		5.7					
		22.8		5.8					
17-Nov-14	13	22.5	8.48	5.9	340.0				
		22.6	8.59	5.5	344.0				
18-Nov-14	14	22.6		5.2					
		22.6		5.3					
19-Nov-14	15	22.5	8.36	6.1					
		22.5	8.31	5.7					
20-Nov-14	16	22.8		5.3					
		22.8		5.2					
21-Nov-14	17	22.8	8.31	6.2					
		22.8	8.33	6.1					
22-Nov-14	18	22.6		5.9					
		22.8		5.2					
23-Nov-14	19	22.8		5.8					
		22.8		5.8					
24-Nov-14	20	22.8	7.99	5.1	331.0				
		22.8	8.14	5.9	342.0				
25-Nov-14	21	22.8		6.2					
		22.9		6.4					
26-Nov-14	22	22.5	8.06	6.0					
		22.6	8.00	6.3					
27-Nov-14	23	22.8		7.3					
		22.9		7.0					
28-Nov-14	24	22.6	7.96	6.5					
		22.7	8.11	6.7					
29-Nov-14	25	22.6		6.5					
		22.6		6.9					
30-Nov-14	26	23.0		7.1					
		23.0		7.0					
1-Dec-14	27	22.5	7.95	7.4	317.0				
		22.7	7.96	6.6	320.0				
2-Dec-14	28	22.6	7.99	6.9	322.0	140	106	0.11	J
		22.6	8.01	6.7	324.0				
Mean		**22.7**	**8.04**	**6.2**	**325**	**136**	**107**	**0.36**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.59**	**7.6**	**344**	**140**	**108**	**0.60**	
Min#		**22.2**	**7.59**	**5.1**	**312**	**132**	**106**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1025-AT
GLC ID: 10214

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.44	6.3	298.7	124	90	0.33	
		22.5	7.50	6.1	299.0				
5-Nov-14	1	22.9	7.54	6.7					
		22.8	7.47	6.7					
6-Nov-14	2	22.5		6.6					
		22.5		6.6					
7-Nov-14	3	22.1	7.66	6.4					
		22.2	7.67	6.5					
8-Nov-14	4	22.7		6.7					
		22.8		6.5					
9-Nov-14	5	22.8		6.2					
		22.8		6.4					
10-Nov-14	6	22.5	7.81	6.7	305.0				
		22.4	7.77	6.7	306.0				
11-Nov-14	7	23.1		6.5					
		23.1		6.6					
12-Nov-14	8	22.7	7.80	6.8					
		22.8	7.82	6.7					
13-Nov-14	9	22.7		7.7					
		22.6		7.6					
14-Nov-14	10	22.8	7.91	6.3					
		22.8	7.98	6.7					
15-Nov-14	11	23.0		6.9					
		23.1		7.0					
16-Nov-14	12	22.9		6.6					
		22.8		6.7					
17-Nov-14	13	22.9	8.18	6.7	320.0				
		22.9	8.12	6.4	318.0				
18-Nov-14	14	22.6		6.4					
		22.6		6.4					
19-Nov-14	15	22.6	8.15	6.0					
		22.6	8.10	5.9					
20-Nov-14	16	22.7		5.9					
		22.8		6.1					
21-Nov-14	17	22.8	8.08	6.7					
		22.8	8.11	6.5					
22-Nov-14	18	22.6		6.7					
		22.8		6.6					
23-Nov-14	19	22.9		6.7					
		22.9		6.5					
24-Nov-14	20	22.7	8.03	5.7	323.0				
		22.8	8.02	5.6	327.0				
25-Nov-14	21	22.8		6.5					
		22.9		6.7					
26-Nov-14	22	22.5	7.84	6.5					
		22.7	7.99	6.4					
27-Nov-14	23	22.8		6.7					
		22.9		7.0					
28-Nov-14	24	22.7	8.06	6.9					
		22.7	8.07	6.9					
29-Nov-14	25	22.6		6.2					
		22.6		6.8					
30-Nov-14	26	23.1		7.3					
		23.1		7.1					
1-Dec-14	27	22.7	8.12	7.3	317.0				
		22.7	8.11	7.2	320.0				
2-Dec-14	28	22.6	7.98	6.7	319.0	136	104	0.12	J
		22.6	8.06	6.9	324.0				
Mean		**22.7**	**7.91**	**6.6**	**315**	**130**	**97**	**0.23**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.18**	**7.7**	**327**	**136**	**104**	**0.33**	
Min#		**22.1**	**7.44**	**5.6**	**299**	**124**	**90**	**0.12**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1010-AT
GLC ID: 10215

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	7.61	6.3	307.0	128	98	0.19	J
		22.4	7.49	6.2	306.0				
5-Nov-14	1	22.9	7.51	6.4					
		22.9	7.49	6.4					
6-Nov-14	2	22.4		6.5					
		22.4		6.7					
7-Nov-14	3	22.1	7.69	6.6					
		22.1	7.66	6.8					
8-Nov-14	4	22.8		6.5					
		22.8		6.5					
9-Nov-14	5	22.8		6.8					
		22.8		6.7					
10-Nov-14	6	22.5	7.75	6.7	310.0				
		22.4	7.74	6.8	311.0				
11-Nov-14	7	23.0		7.1					
		23.0		7.0					
12-Nov-14	8	22.8	7.69	6.3					
		22.8	7.75	6.6					
13-Nov-14	9	22.6		7.7					
		22.6		7.7					
14-Nov-14	10	22.7	7.75	6.9					
		22.8	7.82	7.0					
15-Nov-14	11	23.0		7.1					
		23.2		6.6					
16-Nov-14	12	22.8		6.6					
		22.8		7.0					
17-Nov-14	13	23.0	7.87	6.7	312.0				
		23.0	7.87	6.8	313.0				
18-Nov-14	14	22.6		7.0					
		22.6		6.8					
19-Nov-14	15	22.5	7.86	6.7					
		22.5	7.75	6.5					
20-Nov-14	16	22.7		6.3					
		22.8		6.2					
21-Nov-14	17	22.7	7.74	7.0					
		22.6	7.84	7.0					
22-Nov-14	18	22.5		6.7					
		22.7		6.3					
23-Nov-14	19	22.8		7.2					
		22.9		6.4					
24-Nov-14	20	22.8	7.76	6.1	307.0				
		22.9	7.75	6.2	312.0				
25-Nov-14	21	22.9		6.8					
		22.9		7.1					
26-Nov-14	22	22.7	7.80	6.7					
		22.7	7.85	7.0					
27-Nov-14	23	22.8		6.9					
		22.8		7.0					
28-Nov-14	24	22.6	7.89	7.3					
		22.7	7.90	7.4					
29-Nov-14	25	22.8		7.3					
		22.9		7.4					
30-Nov-14	26	23.1		7.1					
		23.1		7.0					
1-Dec-14	27	22.7	7.94	7.4	308.0				
		22.8	7.91	7.3	310.0				
2-Dec-14	28	22.7	7.86	6.9	310.0	148	104	0.12	
		22.7	7.80	6.9	311.0				
Mean		**22.7**	**7.76**	**6.8**	**310**	**138**	**101**	**0.16**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.2**	**7.94**	**7.7**	**313**	**148**	**104**	**0.19**	
Min#		**22.1**	**7.49**	**6.1**	**306**	**128**	**98**	**0.12**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1029-AT
GLC ID: 10216

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.5	8.19	5.1	386.0	156	132	0.45	
		22.5	8.17	5.2	360.0				
5-Nov-14	1	22.8	8.07	6.6					
		22.8	8.16	6.6					
6-Nov-14	2	22.4		6.9					
		22.4		6.4					
7-Nov-14	3	22.4	7.59	5.9					
		22.4	7.54	6.3					
8-Nov-14	4	22.8		6.4					
		22.8		6.6					
9-Nov-14	5	22.8		6.4					
		22.8		6.1					
10-Nov-14	6	22.4	7.94	6.8	325.0				
		22.4	8.01	6.7	322.0				
11-Nov-14	7	22.9		6.8					
		22.9		6.4					
12-Nov-14	8	22.8	7.95	6.7					
		22.8	7.92	6.6					
13-Nov-14	9	22.6		7.9					
		22.6		7.7					
14-Nov-14	10	22.7	7.98	6.7					
		22.8	7.89	6.3					
15-Nov-14	11	23.2		6.8					
		23.2		6.8					
16-Nov-14	12	22.8		6.6					
		22.8		6.6					
17-Nov-14	13	23.0	8.08	6.9	316.0				
		23.0	8.09	6.8	321.0				
18-Nov-14	14	22.6		7.0					
		22.6		6.7					
19-Nov-14	15	22.5	7.87	6.5					
		22.4	7.92	6.4					
20-Nov-14	16	22.8		6.6					
		22.9		6.1					
21-Nov-14	17	22.5	8.07	7.2					
		22.6	7.94	7.1					
22-Nov-14	18	22.5		6.7					
		22.7		6.4					
23-Nov-14	19	22.8		7.0					
		22.9		6.3					
24-Nov-14	20	22.9	7.97	6.7	317.0				
		22.9	8.19	6.4	325.0				
25-Nov-14	21	22.9		6.7					
		22.9		6.8					
26-Nov-14	22	22.6	8.33	6.7					
		22.8	8.15	6.6					
27-Nov-14	23	22.5		7.0					
		22.5		7.2					
28-Nov-14	24	22.8	8.13	7.6					
		22.8	8.42	7.2					
29-Nov-14	25	22.7		7.2					
		22.8		7.2					
30-Nov-14	26	23.0		7.2					
		23.0		7.3					
1-Dec-14	27	22.7	8.30	7.5	319.0				
		22.9	8.16	7.2	318.0				
2-Dec-14	28	22.7	7.95	6.4	321.0	140	110	0.10	J
		22.6	7.97	6.5	315.0	144	110	0.10	J
Mean		**22.7**	**8.03**	**6.7**	**329**	**147**	**117**	**0.22**	
Number		**58**	**28**	**58**	**12**	**3**	**3**	**3**	
Max #		**23.2**	**8.42**	**7.9**	**386**	**156**	**132**	**0.45**	
Min#		**22.4**	**7.54**	**5.1**	**315**	**140**	**110**	**0.10**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1001-AT
GLC ID: 10217

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.55	6.1	311.0	136	96	0.28	
		22.7	7.62	6.2	309.0				
5-Nov-14	1	22.8	7.59	6.2					
		22.8	7.54	6.0					
6-Nov-14	2	22.7		6.1					
		22.8		6.0					
7-Nov-14	3	22.6	7.79	6.3					
		22.6	7.74	6.2					
8-Nov-14	4	22.8		6.6					
		22.9		6.6					
9-Nov-14	5	22.8		6.6					
		22.9		6.6					
10-Nov-14	6	22.4	7.72	7.1	314.0				
		22.4	7.70	6.9	311.0				
11-Nov-14	7	22.9		6.3					
		23.0		6.2					
12-Nov-14	8	22.5	7.66	6.7					
		22.6	7.64	6.6					
13-Nov-14	9	23.0		7.4					
		23.0		7.3					
14-Nov-14	10	22.8	7.67	6.8					
		23.0	7.67	6.6					
15-Nov-14	11	22.7		6.7					
		22.7		6.8					
16-Nov-14	12	22.6		6.7					
		22.6		6.7					
17-Nov-14	13	22.6	7.86	7.1	313.0				
		22.8	7.82	6.9	312.0				
18-Nov-14	14	22.6		6.7					
		22.8		6.7					
19-Nov-14	15	22.6	7.75	6.9					
		22.6	7.75	6.7					
20-Nov-14	16	22.9		5.8					
		22.9		5.5					
21-Nov-14	17	22.9	7.73	6.6					
		22.9	7.82	6.9					
22-Nov-14	18	22.4		6.0					
		22.5		6.5					
23-Nov-14	19	22.6		7.1					
		22.8		6.9					
24-Nov-14	20	22.9	7.67	6.5	312.0				
		23.0	7.65	6.2	315.0				
25-Nov-14	21	22.6		7.0					
		22.7		7.0					
26-Nov-14	22	22.7	7.68	6.7					
		22.7	7.81	6.9					
27-Nov-14	23	22.3		7.3					
		22.4		7.5					
28-Nov-14	24	22.5	7.92	7.2					
		22.7	7.81	6.7					
29-Nov-14	25	22.7		7.2					
		22.7		6.6					
30-Nov-14	26	22.7		6.9					
		22.7		6.7					
1-Dec-14	27	22.7	7.99	7.5	308.0				
		22.6	7.92	7.2	310.0				
2-Dec-14	28	22.3	7.82	6.6	315.0	140	100	0.12	J
		22.5	7.86	6.8	313.0				
Mean		**22.7**	**7.74**	**6.7**	**312**	**138**	**98**	**0.20**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.0**	**7.99**	**7.5**	**315**	**140**	**100**	**0.28**	
Min#		**22.3**	**7.54**	**5.5**	**308**	**136**	**96**	**0.12**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1042-AT
GLC ID: 10218

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.63	5.6	346.0	140	124	0.70	
		22.8	7.69	5.8	351.0				
5-Nov-14	1	22.8	7.67	6.0					
		22.8	7.72	5.8					
6-Nov-14	2	22.8		6.4					
		22.8		6.0					
7-Nov-14	3	22.7	7.49	6.2					
		22.7	7.53	6.3					
8-Nov-14	4	22.9		6.0					
		22.8		5.7					
9-Nov-14	5	22.8		6.6					
		22.8		6.2					
10-Nov-14	6	22.6	8.44	6.0	335.0				
		22.7	8.38	5.7	337.0				
11-Nov-14	7	22.8		4.8					
		23.0		4.5					
12-Nov-14	8	22.9	8.51	4.9					
		23.0	8.59	5.1					
13-Nov-14	9	23.0		7.6					
		23.0		7.4					
14-Nov-14	10	22.8	8.61	6.6					
		22.9	8.72	6.3					
15-Nov-14	11	22.7		6.5					
		22.7		5.9					
16-Nov-14	12	22.7		5.3					
		22.6		5.2					
17-Nov-14	13	22.9	8.21	7.6	337.0				
		22.9	8.62	6.5	352.0				
18-Nov-14	14	22.7		5.3					
		22.7		5.3					
19-Nov-14	15	22.7	8.24	6.5					
		22.7	8.37	6.3					
20-Nov-14	16	23.0		5.2					
		23.0		5.4					
21-Nov-14	17	22.9	8.17	4.7					
		22.8	8.21	5.1					
22-Nov-14	18	22.5		5.6					
		22.7		5.3					
23-Nov-14	19	22.7		6.3					
		22.9		5.6					
24-Nov-14	20	23.0	8.03	6.1	349.0				
		23.0	8.06	5.4	353.0				
25-Nov-14	21	22.7		5.5					
		22.7		5.4					
26-Nov-14	22	22.6	7.98	5.3					
		22.7	8.01	5.6					
27-Nov-14	23	22.5		5.0					
		22.6		5.5					
28-Nov-14	24	22.7	7.95	6.4					
		22.8	7.95	6.3					
29-Nov-14	25	22.7		7.4					
		22.6		7.5					
30-Nov-14	26	22.8		6.0					
		22.9		6.1					
1-Dec-14	27	22.5	8.02	6.8	330.0				
		22.7	8.04	6.5	337.0				
2-Dec-14	28	22.5	7.61	5.3	328.0	140	108	0.14	J
		22.6	7.67	5.4	328.0				
Mean		**22.8**	**8.08**	**5.9**	**340**	**140**	**116**	**0.42**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.0**	**8.72**	**7.6**	**353**	**140**	**124**	**0.70**	
Min#		**22.5**	**7.49**	**4.5**	**328**	**140**	**108**	**0.14**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1009-AT
GLC ID: 10219

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.66	6.5	247.1	132	96	0.15	J
		22.8	7.65	6.3	238.0				
5-Nov-14	1	22.8	7.67	6.4					
		22.8	7.66	6.3					
6-Nov-14	2	22.9		6.6					
		22.9		6.6					
7-Nov-14	3	22.6	7.67	6.8					
		22.6	7.64	6.7					
8-Nov-14	4	22.9		6.7					
		22.9		6.7					
9-Nov-14	5	22.8		6.8					
		22.9		6.2					
10-Nov-14	6	22.7	8.03	6.0	318.0				
		22.7	7.95	6.6	309.0				
11-Nov-14	7	22.8		6.2					
		22.9		6.3					
12-Nov-14	8	23.0	7.69	6.4					
		23.0	7.71	6.7					
13-Nov-14	9	23.0		7.8					
		23.0		7.7					
14-Nov-14	10	22.9	7.75	6.8					
		22.9	7.72	6.8					
15-Nov-14	11	22.8		7.1					
		22.9		6.9					
16-Nov-14	12	22.7		6.6					
		22.7		6.5					
17-Nov-14	13	22.5	7.93	7.1	317.0				
		22.8	7.89	7.0	313.0				
18-Nov-14	14	22.6		6.8					
		22.7		6.7					
19-Nov-14	15	22.7	7.84	6.3					
		22.7	7.80	6.6					
20-Nov-14	16	22.8		6.5					
		22.9		6.5					
21-Nov-14	17	22.6	7.77	6.9					
		22.9	7.80	6.8					
22-Nov-14	18	22.6		4.9					
		22.7		5.8					
23-Nov-14	19	22.8		5.0					
		22.9		6.1					
24-Nov-14	20	23.0	7.83	6.6	305.0				
		23.1	7.77	6.5	312.0				
25-Nov-14	21	22.5		7.2					
		22.4		5.9					
26-Nov-14	22	22.8	7.75	6.4					
		22.7	8.09	7.4					
27-Nov-14	23	22.5		7.3					
		22.4		7.4					
28-Nov-14	24	22.7	7.94	7.2					
		22.8	7.90	7.3					
29-Nov-14	25	22.6		6.1					
		22.6		6.5					
30-Nov-14	26	22.7		7.2					
		22.5		7.3					
1-Dec-14	27	22.5	8.02	7.4	319.0				
		22.6	7.94	7.6	307.0				
2-Dec-14	28	22.3	7.80	6.7	311.0	140	102	0.17	J
		22.2	7.89	6.9	305.0				
Mean		**22.7**	**7.81**	**6.7**	**300**	**136**	**99**	**0.16**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**8.09**	**7.8**	**319**	**140**	**102**	**0.17**	
Min#		**22.2**	**7.64**	**4.9**	**238**	**132**	**96**	**0.15**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1017-AT
GLC ID: 10220

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.63	6.4	305.0	132	96	0.25	
		22.8	7.62	6.3	314.0				
5-Nov-14	1	22.9	7.57	6.4					
		22.8	7.60	6.4					
6-Nov-14	2	22.9		6.7					
		23.0		6.6					
7-Nov-14	3	22.7	7.74	6.7					
		22.7	7.76	6.7					
8-Nov-14	4	22.9		6.9					
		22.9		6.8					
9-Nov-14	5	22.9		6.5					
		22.9		6.1					
10-Nov-14	6	22.7	7.77	6.7	309.0				
		22.8	7.79	6.8	309.0				
11-Nov-14	7	22.9		6.3					
		23.1		6.3					
12-Nov-14	8	23.0	7.66	6.6					
		23.0	7.70	6.8					
13-Nov-14	9	23.1		8.1					
		23.0		7.9					
14-Nov-14	10	22.9	7.61	6.4					
		23.0	7.73	6.6					
15-Nov-14	11	22.8		7.1					
		22.9		6.7					
16-Nov-14	12	22.8		6.9					
		22.7		7.0					
17-Nov-14	13	22.9	7.86	6.7	310.0				
		22.9	7.85	6.7	309.0				
18-Nov-14	14	22.7		6.8					
		22.8		6.8					
19-Nov-14	15	22.7	7.77	6.6					
		22.7	7.81	6.8					
20-Nov-14	16	22.9		6.8					
		23.0		6.5					
21-Nov-14	17	23.0	7.69	6.6					
		23.0	7.80	6.8					
22-Nov-14	18	22.6		6.4					
		22.7		6.4					
23-Nov-14	19	23.0		6.7					
		23.0		6.5					
24-Nov-14	20	23.1	7.70	6.0	310.0				
		23.1	7.76	6.1	312.0				
25-Nov-14	21	22.7		6.8					
		22.8		7.0					
26-Nov-14	22	22.7	7.86	7.0					
		22.8	7.76	6.7					
27-Nov-14	23	22.7		7.4					
		22.7		7.1					
28-Nov-14	24	22.7	7.89	7.3					
		22.8	7.88	7.1					
29-Nov-14	25	22.8		7.2					
		22.7		7.4					
30-Nov-14	26	22.7		7.3					
		22.7		7.1					
1-Dec-14	27	22.6	7.93	7.4	304.0				
		22.7	7.98	7.2	307.0				
2-Dec-14	28	22.3	7.88	6.8	314.0	132	104	0.19	J
		22.3	7.89	7.0	313.0				
Mean		**22.8**	**7.77**	**6.8**	**310**	**132**	**100**	**0.22**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.1**	**7.98**	**8.1**	**314**	**132**	**104**	**0.25**	
Min#		**22.3**	**7.57**	**6.0**	**304**	**132**	**96**	**0.19**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1011-AT
GLC ID: 10221

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.77	6.7	305.0	120	96	0.16	J
		22.6	7.77	6.5	306.0				
5-Nov-14	1	22.7	7.71	6.6					
		22.8	7.69	6.5					
6-Nov-14	2	22.9		6.4					
		23.0		6.6					
7-Nov-14	3	22.7	7.81	6.9					
		22.7	7.80	6.8					
8-Nov-14	4	22.7		7.0					
		22.7		7.0					
9-Nov-14	5	22.9		6.8					
		22.9		6.8					
10-Nov-14	6	22.7	7.82	6.8	314.0				
		22.7	7.90	6.9	311.0				
11-Nov-14	7	22.9		6.5					
		23.1		6.5					
12-Nov-14	8	23.1	7.76	6.9					
		23.1	7.75	6.7					
13-Nov-14	9	23.2		8.1					
		23.1		8.0					
14-Nov-14	10	23.1	7.76	6.8					
		23.1	7.75	6.7					
15-Nov-14	11	22.9		7.2					
		23.0		6.5					
16-Nov-14	12	23.0		6.7					
		22.8		6.9					
17-Nov-14	13	22.9	7.84	6.5	315.0				
		23.0	7.91	6.6	313.0				
18-Nov-14	14	22.8		6.8					
		22.8		6.9					
19-Nov-14	15	22.7	7.83	6.8					
		22.7	7.84	6.8					
20-Nov-14	16	22.9		6.8					
		23.0		6.3					
21-Nov-14	17	23.0	7.83	7.0					
		23.0	7.80	6.9					
22-Nov-14	18	22.7		7.1					
		22.8		6.7					
23-Nov-14	19	22.9		6.5					
		23.1		6.5					
24-Nov-14	20	23.1	7.71	6.5	312.0				
		23.1	7.78	6.3	312.0				
25-Nov-14	21	22.9		6.9					
		23.0		6.6					
26-Nov-14	22	22.8	7.84	6.1					
		22.9	7.84	6.4					
27-Nov-14	23	22.8		7.2					
		22.8		7.1					
28-Nov-14	24	22.9	7.98	7.2					
		22.9	7.98	7.1					
29-Nov-14	25	22.6		7.3					
		22.6		6.7					
30-Nov-14	26	22.8		7.2					
		22.8		7.2					
1-Dec-14	27	22.6	7.86	6.9	304.0				
		22.8	7.94	7.3	307.0				
2-Dec-14	28	22.3	7.82	6.7	311.0	140	104	0.18	J
		22.4	7.77	6.6	312.0				
Mean		**22.9**	**7.82**	**6.8**	**310**	**130**	**100**	**0.17**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.2**	**7.98**	**8.1**	**315**	**140**	**104**	**0.18**	
Min#		**22.3**	**7.69**	**6.1**	**304**	**120**	**96**	**0.16**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1031-AT
GLC ID: 10222

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.55	6.4	301.0	132	96	0.28	
		22.5	7.58	6.3	302.0	124	96	0.28	
5-Nov-14	1	22.8	7.55	6.3					
		22.7	7.61	6.2					
6-Nov-14	2	22.8		6.5					
		22.8		6.6					
7-Nov-14	3	22.7	7.68	7.0					
		22.7	7.66	6.8					
8-Nov-14	4	22.7		6.7					
		22.7		6.7					
9-Nov-14	5	22.9		6.6					
		22.9		6.5					
10-Nov-14	6	22.7	7.81	6.9	305.0				
		22.7	7.75	6.8	306.0				
11-Nov-14	7	22.9		6.5					
		23.1		6.7					
12-Nov-14	8	23.0	7.69	6.8					
		23.0	7.64	6.6					
13-Nov-14	9	22.9		8.1					
		23.0		7.9					
14-Nov-14	10	22.9	7.71	6.5					
		22.9	7.70	6.4					
15-Nov-14	11	23.0		6.6					
		23.1		6.8					
16-Nov-14	12	22.9		6.2					
		22.9		6.6					
17-Nov-14	13	22.9	7.94	6.8	311.0				
		23.0	7.92	6.7	313.0				
18-Nov-14	14	22.8		6.7					
		22.8		6.6					
19-Nov-14	15	22.7	7.85	6.9					
		22.6	7.88	6.8					
20-Nov-14	16	22.8		6.2					
		23.0		6.1					
21-Nov-14	17	23.1	7.84	6.5					
		23.1	7.88	6.7					
22-Nov-14	18	22.7		6.8					
		22.8		6.4					
23-Nov-14	19	23.0		6.7					
		23.1		6.3					
24-Nov-14	20	23.1	7.75	5.7	312.0				
		23.1	7.82	5.8	315.0				
25-Nov-14	21	23.0		6.4					
		23.0		6.5					
26-Nov-14	22	22.8	7.81	6.7					
		22.8	7.81	6.6					
27-Nov-14	23	22.9		6.5					
		22.9		6.6					
28-Nov-14	24	22.7	7.98	7.2					
		22.8	8.02	7.1					
29-Nov-14	25	22.6		7.5					
		22.6		7.1					
30-Nov-14	26	22.9		6.7					
		22.9		6.9					
1-Dec-14	27	22.8	7.98	7.2	299.0				
		22.8	8.05	7.1	312.0				
2-Dec-14	28	22.4	7.81	6.1	315.0	148	108	0.13	J
		22.4	7.84	5.9	314.0	140	106	0.14	J
Mean		**22.8**	**7.79**	**6.7**	**309**	**136**	**102**	**0.21**	
Number		**58**	**28**	**58**	**12**	**4**	**4**	**4**	
Max #		**23.1**	**8.05**	**8.1**	**315**	**148**	**108**	**0.28**	
Min#		**22.4**	**7.55**	**5.7**	**299**	**124**	**96**	**0.13**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1033-AT
GLC ID: 10223

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.39	5.9	304.0	124	86	0.33	
		22.7	7.44	5.9	304.0				
5-Nov-14	1	22.8	7.46	6.1					
		22.7	7.46	6.3					
6-Nov-14	2	22.9		6.6					
		22.8		6.6					
7-Nov-14	3	22.6	7.57	6.7					
		22.7	7.63	6.6					
8-Nov-14	4	22.8		6.5					
		22.9		6.4					
9-Nov-14	5	22.9		6.1					
		22.9		6.0					
10-Nov-14	6	22.7	8.06	7.0	325.0				
		22.6	8.09	6.6	319.0				
11-Nov-14	7	22.9		6.2					
		23.0		6.1					
12-Nov-14	8	23.0	8.51	5.4					
		23.0	8.54	5.6					
13-Nov-14	9	23.2		7.9					
		23.3		6.5					
14-Nov-14	10	23.0	8.74	5.3					
		23.1	8.66	5.3					
15-Nov-14	11	23.0		6.6					
		23.0		5.9					
16-Nov-14	12	23.0		5.6					
		22.8		6.1					
17-Nov-14	13	22.9	8.51	6.6	348.0				
		22.9	8.41	6.3	337.0				
18-Nov-14	14	22.5		6.1					
		22.7		5.6					
19-Nov-14	15	22.7	8.66	5.9					
		22.7	8.32	5.9					
20-Nov-14	16	23.0		5.1					
		23.0		5.2					
21-Nov-14	17	23.1	8.27	5.4					
		23.0	8.47	6.1					
22-Nov-14	18	22.7		5.7					
		22.8		5.4					
23-Nov-14	19	23.0		6.1					
		23.0		5.8					
24-Nov-14	20	23.1	8.31	5.5	356.0				
		23.1	8.21	4.9	345.0				
25-Nov-14	21	22.8		6.2					
		22.9		6.0					
26-Nov-14	22	22.7	7.91	6.1					
		22.8	7.92	6.0					
27-Nov-14	23	22.9		6.0					
		22.9		6.3					
28-Nov-14	24	22.7	8.14	6.5					
		22.8	8.07	6.5					
29-Nov-14	25	22.6		7.3					
		22.6		7.4					
30-Nov-14	26	23.0		6.4					
		22.9		6.5					
1-Dec-14	27	22.8	7.83	6.4	302.0				
		22.8	7.84	6.5	317.0				
2-Dec-14	28	22.3	7.86	6.4	320.0	140	100	0.14	J
		22.5	7.99	6.5	319.0				
Mean		**22.8**	**8.08**	**6.1**	**325**	**132**	**93**	**0.24**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.3**	**8.74**	**7.9**	**356**	**140**	**100**	**0.33**	
Min#		**22.3**	**7.39**	**4.9**	**302**	**124**	**86**	**0.14**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1034-AT
GLC ID: 10224

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.7	7.28	5.6	321.0	120	100	2.68	
		22.6	7.33	5.3	322.0				
5-Nov-14	1	22.8	7.37	5.9					
		22.8	7.40	6.1					
6-Nov-14	2	22.8		6.4					
		22.9		6.3					
7-Nov-14	3	22.6	7.50	6.5					
		22.8	7.49	6.3					
8-Nov-14	4	22.8		5.7					
		22.8		5.9					
9-Nov-14	5	22.9		6.3					
		23.0		5.8					
10-Nov-14	6	22.5	7.77	6.4	300.0				
		22.7	7.57	6.2	299.2				
11-Nov-14	7	23.0		5.9					
		23.0		5.6					
12-Nov-14	8	23.0	7.76	6.3					
		23.0	7.63	6.2					
13-Nov-14	9	23.2		6.8					
		23.1		6.8					
14-Nov-14	10	23.0	8.16	6.2					
		23.0	8.02	6.0					
15-Nov-14	11	23.0		6.3					
		23.0		6.4					
16-Nov-14	12	22.9		6.0					
		22.8		5.9					
17-Nov-14	13	22.8	8.71	6.2	339.0				
		22.8	8.75	6.0	338.0				
18-Nov-14	14	22.8		5.5					
		22.9		5.2					
19-Nov-14	15	22.7	8.68	5.8					
		22.7	8.80	5.6					
20-Nov-14	16	22.8		6.0					
		22.9		5.3					
21-Nov-14	17	22.8	8.73	5.6					
		23.0	8.77	5.3					
22-Nov-14	18	22.7		5.4					
		22.8		5.1					
23-Nov-14	19	22.9		5.8					
		23.0		5.4					
24-Nov-14	20	23.0	8.46	5.1	360.0				
		23.1	8.58	4.6	361.0				
25-Nov-14	21	22.8		5.8					
		22.9		5.5					
26-Nov-14	22	22.7	8.35	5.7					
		22.8	8.35	5.6					
27-Nov-14	23	22.9		6.4					
		22.9		6.1					
28-Nov-14	24	22.7	8.09	6.6					
		22.8	8.14	6.0					
29-Nov-14	25	22.7		7.2					
		22.6		7.3					
30-Nov-14	26	23.1		5.9					
		23.0		6.0					
1-Dec-14	27	22.8	7.90	6.1	331.0				
		22.8	7.88	5.9	335.0				
2-Dec-14	28	22.3	7.81	5.5	343.0	156	108	0.10	J
		22.3	7.89	5.7	339.0				
Mean		**22.8**	**8.04**	**5.9**	**332**	**138**	**104**	**1.39**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.2**	**8.80**	**7.3**	**361**	**156**	**108**	**2.68**	
Min#		**22.3**	**7.28**	**4.6**	**299**	**120**	**100**	**0.10**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1002-AT
GLC ID: 10225

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.6	7.30	5.8	288.1	120	88	0.65	
		22.7	7.35	5.8	283.7				
5-Nov-14	1	22.8	7.36	5.4					
		22.7	7.38	5.6					
6-Nov-14	2	23.0		6.2					
		23.0		6.0					
7-Nov-14	3	22.8	7.53	6.2					
		22.8	7.53	6.2					
8-Nov-14	4	22.9		6.2					
		22.9		5.9					
9-Nov-14	5	22.8		5.9					
		22.9		6.0					
10-Nov-14	6	22.7	7.83	6.0	311.0				
		22.7	7.84	6.2	310.0				
11-Nov-14	7	23.0		6.0					
		23.0		5.6					
12-Nov-14	8	23.0	7.90	6.5					
		23.0	8.03	6.4					
13-Nov-14	9	23.4		7.3					
		23.3		7.1					
14-Nov-14	10	22.9	8.01	5.8					
		23.0	8.14	6.1					
15-Nov-14	11	23.0		6.2					
		23.0		6.4					
16-Nov-14	12	22.8		5.9					
		22.7		6.2					
17-Nov-14	13	22.8	8.25	6.3	328.0				
		22.8	8.19	6.1	328.0				
18-Nov-14	14	22.8		6.0					
		23.0		5.9					
19-Nov-14	15	22.6	8.12	5.7					
		22.6	8.06	5.9					
20-Nov-14	16	22.8		5.8					
		22.9		5.7					
21-Nov-14	17	23.0	8.09	6.6					
		23.0	8.24	6.7					
22-Nov-14	18	22.8		5.8					
		22.9		5.7					
23-Nov-14	19	22.9		5.7					
		23.0		5.5					
24-Nov-14	20	23.0	7.93	6.2	322.0				
		23.1	8.04	5.9	329.0				
25-Nov-14	21	22.8		6.2					
		22.9		6.2					
26-Nov-14	22	22.9	7.79	6.4					
		23.0	7.82	6.0					
27-Nov-14	23	23.0		6.5					
		23.0		6.3					
28-Nov-14	24	22.6	7.89	6.5					
		22.8	7.96	6.7					
29-Nov-14	25	22.8		7.2					
		22.8		7.5					
30-Nov-14	26	23.0		6.0					
		23.0		5.9					
1-Dec-14	27	22.8	7.81	6.3	306.0				
		22.8	7.73	6.3	301.0				
2-Dec-14	28	22.6	7.64	6.2	312.0	136	100	0.06	J
		22.4	7.72	6.0	315.0				
Mean		**22.9**	**7.84**	**6.1**	**311**	**128**	**94**	**0.36**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.4**	**8.25**	**7.5**	**329**	**136**	**100**	**0.65**	
Min#		**22.4**	**7.30**	**5.4**	**284**	**120**	**88**	**0.06**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1005-AT
GLC ID: 10226

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.7	7.61	6.1	300.0	120	94	0.24	
		22.7	7.70	6.1	303.0				
5-Nov-14	1	22.7	7.62	6.1					
		22.7	7.60	6.2					
6-Nov-14	2	22.7		6.7					
		22.9		6.8					
7-Nov-14	3	22.7	7.68	6.3					
		22.7	7.74	6.4					
8-Nov-14	4	22.9		6.7					
		22.9		6.7					
9-Nov-14	5	22.8		6.7					
		22.9		6.2					
10-Nov-14	6	22.7	7.83	6.1	309.0				
		22.8	7.80	6.5	308.0				
11-Nov-14	7	23.0		5.9					
		23.0		6.0					
12-Nov-14	8	23.0	7.73	6.6					
		23.0	7.71	6.7					
13-Nov-14	9	23.3		7.4					
		23.3		7.4					
14-Nov-14	10	22.9	7.76	6.6					
		23.0	7.71	6.4					
15-Nov-14	11	23.0		6.3					
		23.0		6.5					
16-Nov-14	12	22.8		6.7					
		22.7		6.6					
17-Nov-14	13	22.7	7.80	6.6	311.0				
		22.8	7.94	6.9	308.0				
18-Nov-14	14	22.9		6.7					
		22.8		6.6					
19-Nov-14	15	22.6	7.81	6.1					
		22.5	7.84	6.4					
20-Nov-14	16	22.7		6.6					
		22.8		6.5					
21-Nov-14	17	23.1	7.84	7.2					
		23.2	7.78	6.9					
22-Nov-14	18	22.8		4.7					
		22.9		5.9					
23-Nov-14	19	23.0		6.2					
		23.0		6.2					
24-Nov-14	20	23.0	7.68	5.9	309.0				
		23.1	7.70	5.8	311.0				
25-Nov-14	21	22.8		7.1					
		23.1		6.4					
26-Nov-14	22	23.4	7.75	6.4					
		23.6	7.77	6.6					
27-Nov-14	23	23.0		7.4					
		22.9		7.2					
28-Nov-14	24	22.8	7.93	7.5					
		22.8	7.88	7.1					
29-Nov-14	25	23.0		7.4					
		22.9		7.0					
30-Nov-14	26	23.0		7.0					
		23.0		7.1					
1-Dec-14	27	22.8	7.91	7.2	304.0				
		22.8	7.97	7.2	305.0				
2-Dec-14	28	22.2	7.82	6.6	310.0	144	102	0.08	J
		22.3	7.89	6.4	311.0				
Mean		**22.9**	**7.78**	**6.6**	**307**	**132**	**98**	**0.16**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.6**	**7.97**	**7.5**	**311**	**144**	**102**	**0.24**	
Min#		**22.2**	**7.60**	**4.7**	**300**	**120**	**94**	**0.08**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1041-AT
GLC ID: 10254

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.8	7.85	7.0	332.0	136	110	0.46	
		22.7	7.87	6.9	333.0				
5-Nov-14	1	22.7	7.78	6.5					
		22.7	7.77	6.4					
6-Nov-14	2	23.0		7.1					
		23.1		7.1					
7-Nov-14	3	22.8	7.86	7.0					
		22.6	7.82	7.1					
8-Nov-14	4	22.9		7.3					
		23.0		7.1					
9-Nov-14	5	22.8		6.4					
		22.9		6.9					
10-Nov-14	6	22.6	7.88	6.7	314.0				
		22.7	7.93	6.9	313.0				
11-Nov-14	7	22.9		6.7					
		23.0		6.9					
12-Nov-14	8	23.1	7.84	7.2					
		23.1	7.86	7.2					
13-Nov-14	9	23.3		7.2					
		23.4		7.7					
14-Nov-14	10	23.0	7.89	7.0					
		23.0	7.87	7.1					
15-Nov-14	11	23.0		6.8					
		23.1		6.7					
16-Nov-14	12	22.9		6.9					
		22.9		6.8					
17-Nov-14	13	22.8	7.96	7.3	312.0				
		22.7	8.00	7.3	312.0				
18-Nov-14	14	23.1		6.8					
		23.0		6.8					
19-Nov-14	15	22.5	7.80	7.0					
		22.6	7.89	6.9					
20-Nov-14	16	22.9		6.6					
		22.9		6.5					
21-Nov-14	17	23.1	7.84	7.1					
		23.1	7.83	7.2					
22-Nov-14	18	22.8		7.0					
		23.0		6.7					
23-Nov-14	19	22.9		6.8					
		23.0		6.8					
24-Nov-14	20	23.1	7.88	6.5	312.0				
		23.1	7.91	6.5	311.0				
25-Nov-14	21	23.0		7.0					
		23.0		6.8					
26-Nov-14	22	23.6	7.97	7.0					
		23.6	8.05	7.0					
27-Nov-14	23	23.0		7.1					
		22.9		7.1					
28-Nov-14	24	22.8	8.10	7.4					
		22.9	8.08	7.4					
29-Nov-14	25	22.9		6.9					
		22.9		7.1					
30-Nov-14	26	23.1		7.4					
		23.1		7.3					
1-Dec-14	27	22.8	8.15	7.4	304.0				
		22.7	8.12	7.4	308.0				
2-Dec-14	28	22.6	7.76	6.2	316.0	140	106	0.13	J
		22.5	7.85	6.6	315.0				
Mean		**22.9**	**7.91**	**7.0**	**315**	**138**	**108**	**0.30**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.6**	**8.15**	**7.7**	**333**	**140**	**110**	**0.46**	
Min#		**22.5**	**7.76**	**6.2**	**304**	**136**	**106**	**0.13**	

Ammonia Reporting Limits:

RL = Reporting Limit (0.20 mg/L)

MDL = Minimum Detection Limit (0.02 mg/L)

U = Below MDL

J = ≥MDL and <RL

Project Name: Stantec St. Louis River
Project Number: 2290-01
Sample ID: SS 1012-AT
GLC ID: 10256

Test Dates: 11/4/14- 12/2/14
Test Type: 28 Day Survival and Growth Whole Sediment
Test Species: Hyalella azteca

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Nov-14	0	22.7	7.19	6.5	256.5	108	74	1.33	
		22.8	7.19	6.5	244.6				
5-Nov-14	1	22.7	7.29	6.6					
		22.7	7.26	6.4					
6-Nov-14	2	23.0		7.3					
		23.0		7.3					
7-Nov-14	3	22.7	7.53	7.1					
		22.7	7.54	7.2					
8-Nov-14	4	23.0		7.1					
		23.0		7.1					
9-Nov-14	5	22.7		6.8					
		22.8		7.0					
10-Nov-14	6	22.8	7.66	7.1	290.5				
		22.7	7.58	7.0	288.9				
11-Nov-14	7	22.9		6.7					
		23.0		6.5					
12-Nov-14	8	23.0	7.52	6.9					
		23.0	7.51	6.6					
13-Nov-14	9	23.4		7.8					
		23.4		7.8					
14-Nov-14	10	22.9	7.59	7.2					
		22.9	7.60	7.3					
15-Nov-14	11	23.0		7.2					
		22.9		7.1					
16-Nov-14	12	22.9		6.8					
		22.9		6.8					
17-Nov-14	13	22.8	7.57	6.7	292.2				
		22.9	7.63	6.6	296.7				
18-Nov-14	14	23.0		7.0					
		23.0		6.8					
19-Nov-14	15	22.7	7.62	6.9					
		22.7	7.65	6.9					
20-Nov-14	16	22.8		6.6					
		22.8		6.4					
21-Nov-14	17	23.1	7.66	6.6					
		23.2	7.53	6.3					
22-Nov-14	18	22.8		6.9					
		22.9		6.6					
23-Nov-14	19	22.8		6.8					
		22.9		6.7					
24-Nov-14	20	22.9	7.64	6.2	294.0				
		23.1	7.58	5.9	301.0				
25-Nov-14	21	23.3		6.7					
		23.6		6.6					
26-Nov-14	22	23.8	7.71	7.3					
		23.8	7.69	7.2					
27-Nov-14	23	22.8		7.2					
		22.8		7.1					
28-Nov-14	24	22.8	7.84	7.4					
		22.9	7.71	7.1					
29-Nov-14	25	22.9		7.0					
		22.8		6.7					
30-Nov-14	26	23.1		7.4					
		23.0		7.4					
1-Dec-14	27	22.7	7.86	7.5	293.3				
		22.7	7.86	7.4	296.5				
2-Dec-14	28	22.3	7.79	7.1	299.8	128	98	0.15	J
		22.3	7.81	6.7	301.0				
Mean		**22.9**	**7.59**	**6.9**	**288**	**118**	**86**	**0.74**	
Number		**58**	**28**	**58**	**12**	**2**	**2**	**2**	
Max #		**23.8**	**7.86**	**7.8**	**301**	**128**	**98**	**1.33**	
Min#		**22.3**	**7.19**	**5.9**	**245**	**108**	**74**	**0.15**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Appendix B3
Overlying Water Quality Summaries

- 4-Day *Lumbriculus variegatus*

Project Name: Stantec-St. Louis River
Project Number: 2290-03

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Data Entry

Date	Initials	Data Entered
10/5/2014	mwg	day 0-2

Data Quality Control

Date	Initials	Data QC'ed
12/18/2014	MGM	100% of Con-10221
12/24/2014	KS	10%

Data QC 10%

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: CS
GLEC ID: 123

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.8	7.89	5.5	365	168	140	0.90
		22.9	7.91	4.8	361			
4-Oct-14	1	22.5		5.6				
		22.5		5.9				
5-Oct-14	2	22.6		5.9				
		22.6		5.8				
6-Oct-14	3	22.6		5.7				
		22.6		5.9				
7-Oct-14	4	23.1	7.74	3.2	306	156	124	0.63
		22.9	7.75	3.4	307			
MEAN		**22.7**	**7.82**	**5.2**	**334.8**	**162.0**	**132.0**	**0.77**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**23.1**	**7.91**	**5.9**	**365**	**168**	**140**	**0.90**
Min #		**22.5**	**7.74**	**3.2**	**306**	**156**	**124**	**0.63**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1022-AT (15CM)**
GLEC ID: **10207**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	23.0	7.66	6.2	314	144	96	0.11	J
		23.0	7.55	5.9	313				
4-Oct-14	1	22.5		5.6					
		22.5		5.7					
5-Oct-14	2	22.7		5.9					
		22.7		6.1					
6-Oct-14	3	22.7		5.9					
		22.7		6.2					
7-Oct-14	4	22.9	7.69	5.2	298	T.E.	T.E.	T.E.	
		22.8	7.78	5.7	310				
MEAN		**22.8**	**7.67**	**5.8**	**308.8**	**144.0**	**96.0**	**0.11**	
N=		**10**	**4**	**10**	**4**	**1**	**1**	**1**	
Max #		**23.0**	**7.78**	**6.2**	**314**	**144**	**96**	**0.11**	
Min #		**22.5**	**7.55**	**5.2**	**298**	**144**	**96**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1024-AT (15CM)**
GLEC ID: **10208**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.9	7.58	6.4	300	124	98	0.18	J
		23.0	7.59	6.3	299				
4-Oct-14	1	22.6		5.7					
		22.6		5.9					
5-Oct-14	2	22.7		5.9					
		22.7		6.3					
6-Oct-14	3	22.7		6.7					
		22.7		6.6					
7-Oct-14	4	22.7	7.65	6.0	310	140	100	0.13	J
		22.8	7.64	5.6	311				
MEAN		**22.7**	**7.62**	**6.1**	**305.0**	**132.0**	**99.0**	**0.16**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**23.0**	**7.65**	**6.7**	**311**	**140**	**100**	**0.18**	
Min #		**22.6**	**7.58**	**5.6**	**299**	**124**	**98**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1032-AT (15CM)**
GLEC ID: **10209**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.9	7.60	6.8	296	124	94	0.24	
		23.0	7.61	6.6	295		90		
4-Oct-14	1	22.6		6.0					
		22.5		6.1					
5-Oct-14	2	22.7		6.2					
		22.8		6.1					
6-Oct-14	3	22.8		6.7					
		22.8		6.7					
7-Oct-14	4	22.9	7.69	6.7	299	132	100	0.14	J
		23.0	7.76	6.7	303		100		
MEAN		**22.8**	**7.67**	**6.5**	**298.4**	**128.0**	**96.0**	**0.19**	
N=		**10**	**4**	**10**	**4**	**2**	**4**	**2**	
Max #		**23.0**	**7.76**	**6.8**	**303**	**132**	**100**	**0.24**	
Min #		**22.5**	**7.60**	**6.0**	**295**	**124**	**90**	**0.14**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1021-AT (15CM)**
GLEC ID: **10210**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.9	7.73	7.0	308	144	98	0.11	J
		22.9	7.76	6.4	307				
4-Oct-14	1	22.6		6.0					
		22.6		6.0					
5-Oct-14	2	22.8		6.6					
		22.8		6.3					
6-Oct-14	3	22.8		6.8					
		22.8		6.8					
7-Oct-14	4	22.8	7.77	6.4	308	140	100	0.13	J
		22.7	7.83	6.4	307				
MEAN		**22.8**	**7.77**	**6.5**	**307.5**	**142.0**	**99.0**	**0.12**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.83**	**7.0**	**308**	**144**	**100**	**0.13**	
Min #		**22.6**	**7.73**	**6.0**	**307**	**140**	**98**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1026-AT (15CM)**
GLEC ID: **10212**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.8	7.51	6.6	297	120	90	0.14	J
		22.9	7.53	6.5	297				
4-Oct-14	1	22.5		6.0					
		22.5		5.9					
5-Oct-14	2	22.7		6.6					
		22.8		6.2					
6-Oct-14	3	22.8		7.1					
		22.8		6.9					
7-Oct-14	4	22.8	7.60	5.5	303	144	98	0.19	J
		22.7	7.71	5.7	302			0.20	
MEAN		**22.7**	**7.59**	**6.3**	**299.8**	**132.0**	**94.0**	**0.18**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**3**	
Max #		**22.9**	**7.71**	**7.1**	**303**	**144**	**98**	**0.20**	
Min #		**22.5**	**7.51**	**5.5**	**297**	**120**	**90**	**0.14**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1028-AT (15CM)**
GLEC ID: **10213**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.8	7.56	6.7	311	128	104	0.34
		22.9	7.64	6.4	309			0.36
4-Oct-14	1	22.5		6.2				
		22.5		6.1				
5-Oct-14	2	22.8		6.0				
		22.7		6.3				
6-Oct-14	3	22.8		6.0				
		22.9		5.9				
7-Oct-14	4	22.7	7.54	4.7	300	128	106	0.20
		22.7	7.70	5.1	316			
MEAN		**22.7**	**7.61**	**5.9**	**309.0**	**128.0**	**105.0**	**0.30**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**3**
Max #		**22.9**	**7.70**	**6.7**	**316**	**128**	**106**	**0.36**
Min #		**22.5**	**7.54**	**4.7**	**300**	**128**	**104**	**0.20**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1025-AT (15CM)**
GLEC ID: **10214**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.8	7.45	6.7	295	124	90	0.20	
		22.9	7.51	6.3	295				
4-Oct-14	1	22.7		6.0					
		22.6		6.0					
5-Oct-14	2	22.7		6.4					
		22.7		6.1					
6-Oct-14	3	22.9		6.2					
		22.9		6.3					
7-Oct-14	4	22.8	7.55	5.4	301	132	98	0.13	J
		22.9	7.61	5.7	301				
MEAN		**22.8**	**7.53**	**6.1**	**298.0**	**128.0**	**94.0**	**0.17**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.61**	**6.7**	**301**	**132**	**98**	**0.20**	
Min #		**22.6**	**7.45**	**5.4**	**295**	**124**	**90**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1010-AT (15CM)**
GLEC ID: **10215**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.8	7.60	6.9	303	136	100	0.09	J
		22.9	7.65	6.6	301				
4-Oct-14	1	22.7		6.0					
		22.7		6.1					
5-Oct-14	2	22.7		6.5					
		22.7		6.5					
6-Oct-14	3	22.9		6.7					
		22.6		6.7					
7-Oct-14	4	22.8	7.66	5.9	301	132	100	0.11	J
		22.9	7.70	6.1	303				
MEAN		**22.8**	**7.65**	**6.4**	**302.0**	**134.0**	**100.0**	**0.10**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.70**	**6.9**	**303**	**136**	**100**	**0.11**	
Min #		**22.6**	**7.60**	**5.9**	**301**	**132**	**100**	**0.09**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1029-AT (15CM)**
GLEC ID: **10216**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.8	8.00	6.0	344	168	124	0.43	
		22.9	8.05	5.2	345				
4-Oct-14	1	22.7		6.0					
		22.6		5.9					
5-Oct-14	2	22.6		6.3					
		22.7		6.2					
6-Oct-14	3	22.9		6.6					
		22.9		6.0					
7-Oct-14	4	22.8	8.04	5.7	338	152	122	0.11	J
		22.8	8.04	5.6	338				
MEAN		**22.8**	**8.03**	**6.0**	**341.3**	**160.0**	**123.0**	**0.27**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**8.05**	**6.6**	**345**	**168**	**124**	**0.43**	
Min #		**22.6**	**8.00**	**5.2**	**338**	**152**	**122**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1001-AT (15CM)**
GLEC ID: **10217**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.7	7.66	6.4	303	124	100	0.25	
		22.8	7.55	6.2	304				
4-Oct-14	1	22.6		6.2					
		22.6		6.0					
5-Oct-14	2	22.6		6.0					
		22.6		6.4					
6-Oct-14	3	22.9		6.3					
		22.9		6.4					
7-Oct-14	4	22.7	7.57	5.4	300	132	100	0.11	J
		22.7	7.67	5.8	302	140			
MEAN		**22.7**	**7.61**	**6.1**	**302.3**	**132.0**	**100.0**	**0.18**	
N=		**10**	**4**	**10**	**4**	**3**	**2**	**2**	
Max #		**22.9**	**7.67**	**6.4**	**304**	**140**	**100**	**0.25**	
Min #		**22.6**	**7.55**	**5.4**	**300**	**124**	**100**	**0.11**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1042-AT (15CM)**
GLEC ID: **10218**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.5	7.58	5.8	335	148	116	0.28
		22.7	7.61	5.7	337			
4-Oct-14	1	22.7		6.3				
		22.8		6.1				
5-Oct-14	2	22.6		5.8				
		22.6		5.7				
6-Oct-14	3	22.6		5.9				
		22.7		5.7				
7-Oct-14	4	22.7	7.99	5.0	329	152	116	0.26
		22.7	7.91	4.2	333			
MEAN		**22.7**	**7.77**	**5.6**	**333.5**	**150.0**	**116.0**	**0.27**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**22.8**	**7.99**	**6.3**	**337**	**152**	**116**	**0.28**
Min #		**22.5**	**7.58**	**4.2**	**329**	**148**	**116**	**0.26**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1009-AT (15CM)**
GLEC ID: **10219**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.7	7.59	6.5	300	124	96	0.08	J
		22.8	7.62	6.9	298		98	0.07	J
4-Oct-14	1	22.6		6.5					
		22.6		6.4					
5-Oct-14	2	22.6		5.9					
		22.6		6.2					
6-Oct-14	3	22.7		6.6					
		22.8		6.6					
7-Oct-14	4	22.7	7.77	6.1	301	136	102	0.13	J
		22.7	7.73	6.4	302		102		
MEAN		**22.7**	**7.68**	**6.4**	**300.2**	**130.0**	**99.5**	**0.09**	
N=		**10**	**4**	**10**	**4**	**2**	**4**	**3**	
Max #		**22.8**	**7.77**	**6.9**	**302**	**136**	**102**	**0.13**	
Min #		**22.6**	**7.59**	**5.9**	**298**	**124**	**96**	**0.07**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1017-AT (15CM)**
GLEC ID: **10220**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.7	7.60	6.8	300	136	98	0.12	J
		22.9	7.63	6.4	300				
4-Oct-14	1	22.6		6.4					
		22.7		6.5					
5-Oct-14	2	22.7		6.4					
		22.7		6.6					
6-Oct-14	3	22.9		6.7					
		22.9		6.6					
7-Oct-14	4	22.7	7.69	6.4	296	128	100	0.15	J
		22.6	7.68	6.2	303			0.14	J
MEAN		**22.7**	**7.65**	**6.5**	**299.8**	**132.0**	**99.0**	**0.14**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**3**	
Max #		**22.9**	**7.69**	**6.8**	**303**	**136**	**100**	**0.15**	
Min #		**22.6**	**7.60**	**6.2**	**296**	**128**	**98**	**0.12**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1011-AT (15CM)**
GLEC ID: **10221**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.9	7.60	7.0	302	124	100	0.08	J
		23.0	7.71	6.6	302				
4-Oct-14	1	22.7		6.4					
		22.7		6.5					
5-Oct-14	2	22.7		6.8					
		22.7		6.6					
6-Oct-14	3	22.9		6.9					
		22.9		7.1					
7-Oct-14	4	22.5	7.80	6.8	306	136	104	0.17	J
		22.5	7.76	6.6	310				
MEAN		**22.8**	**7.72**	**6.7**	**305.0**	**130.0**	**102.0**	**0.13**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**23.0**	**7.80**	**7.1**	**310**	**136**	**104**	**0.17**	
Min #		**22.5**	**7.60**	**6.4**	**302**	**124**	**100**	**0.08**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1031-AT (15CM)**
GLEC ID: **10222**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.8	7.43	6.7	295	124	96	0.22
		22.9	7.52	6.5	294			
4-Oct-14	1	22.7		6.5				
		22.8		6.4				
5-Oct-14	2	22.8		6.7				
		22.8		6.7				
6-Oct-14	3	22.9		6.9				
		22.9		6.5				
7-Oct-14	4	22.7	7.60	5.7	301	132	100	0.28
		22.8	7.61	5.9	300			
MEAN		**22.8**	**7.54**	**6.5**	**297.3**	**128.0**	**98.0**	**0.25**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**22.9**	**7.61**	**6.9**	**301**	**132**	**100**	**0.28**
Min #		**22.7**	**7.43**	**5.7**	**294**	**124**	**96**	**0.22**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: SS 1033-AT (15CM)
GLEC ID: 10223

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (µmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.7	7.44	6.8	294	124	84	0.27
		22.9	7.42	6.7	296			
4-Oct-14	1	22.8		6.2				
		22.8		6.1				
5-Oct-14	2	22.8		6.4				
		22.8		6.4				
6-Oct-14	3	22.9		6.4				
		22.9		6.4				
7-Oct-14	4	22.8	7.78	5.7	305	128	102	0.34
		22.8	7.68	5.0	306			
MEAN		**22.8**	**7.58**	**6.2**	**300.3**	**126.0**	**93.0**	**0.31**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**22.9**	**7.78**	**6.8**	**306**	**128**	**102**	**0.34**
Min #		**22.7**	**7.42**	**5.0**	**294**	**124**	**84**	**0.27**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1034-AT (15CM)**
GLEC ID: **10224**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.7	7.28	6.5	321	126	104	2.40
		22.8	7.34	5.7	321			
4-Oct-14	1	22.6		6.0				
		22.6		6.1				
5-Oct-14	2	22.7		6.7				
		22.8		6.4				
6-Oct-14	3	22.9		6.0				
		22.9		6.2				
7-Oct-14	4	22.7	7.54	5.8	292	128	98	0.60
		22.8	7.53	5.6	294			
MEAN		**22.8**	**7.42**	**6.1**	**307.0**	**127.0**	**101.0**	**1.50**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**22.9**	**7.54**	**6.7**	**321**	**128**	**104**	**2.40**
Min #		**22.6**	**7.28**	**5.6**	**292**	**126**	**98**	**0.60**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1002-AT (15CM)**
GLEC ID: **10225**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.8	7.35	6.6	284	124	88	0.46	
		22.8	7.36	6.2	247				
4-Oct-14	1	22.7		6.0					
		22.7		5.9					
5-Oct-14	2	22.7		6.1					
		22.7		5.8					
6-Oct-14	3	22.9		6.5					
		22.9		6.2					
7-Oct-14	4	22.7	7.74	6.3	300	136	98	0.18	J
		22.7	7.72	6.3	303	124			
MEAN		**22.8**	**7.54**	**6.2**	**283.5**	**128.0**	**93.0**	**0.32**	
N=		**10**	**4**	**10**	**4**	**3**	**2**	**2**	
Max #		**22.9**	**7.74**	**6.6**	**303**	**136**	**98**	**0.46**	
Min #		**22.7**	**7.35**	**5.8**	**247**	**124**	**88**	**0.18**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1002-AT (15CM)**
GLEC ID: **10226**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.7	7.56	6.9	296	120	88	0.15	J
		22.7	7.67	6.6	295				
4-Oct-14	1	22.7		5.9					
		22.8		5.9					
5-Oct-14	2	22.7		6.4					
		22.7		6.0					
6-Oct-14	3	22.9		6.4					
		23.0		6.6					
7-Oct-14	4	22.7	7.75	6.2	309	148	100	0.12	J
		22.7	7.84	6.4	315				

MEAN	**22.8**	**7.71**	**6.3**	**303.7**	**134.0**	**94.0**	**0.14**
N=	**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #	**23.0**	**7.84**	**6.9**	**315**	**148**	**100**	**0.15**
Min #	**22.7**	**7.56**	**5.9**	**295**	**120**	**88**	**0.12**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1041-AT (15CM)**
GLEC ID: **10254**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	
3-Oct-14	0	22.7	7.74	7.0	311	136	104	0.13	J
		22.8	7.79	6.6	310				
4-Oct-14	1	22.8		6.0					
		22.7		6.0					
5-Oct-14	2	22.6		6.4					
		22.7		6.0					
6-Oct-14	3	22.9		7.0					
		22.9		7.0					
7-Oct-14	4	22.7	7.76	6.1	306	140	108	0.16	J
		22.7	7.85	6.5	315				
MEAN		**22.8**	**7.79**	**6.5**	**310.5**	**138.0**	**106.0**	**0.15**	
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**	
Max #		**22.9**	**7.85**	**7.0**	**315**	**140**	**108**	**0.16**	
Min #		**22.6**	**7.74**	**6.0**	**306**	**136**	**104**	**0.13**	

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Project Name: Stantec-St. Louis River
Project Number: 2290-03
Sample ID: **SS 1012-AT (15CM)**
GLEC ID: **10256**

Test Dates: October 03-07, 2014
Test Type: 4 Day Whole Sediment Toxicity Survival Screen
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (μmos)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)
3-Oct-14	0	22.8	7.27	6.9	267	104	78	1.04
		22.9	7.29	6.7	267			
4-Oct-14	1	22.7		6.1				
		22.7		5.9				
5-Oct-14	2	22.6		6.4				
		22.6		6.6				
6-Oct-14	3	22.8		7.2				
		22.9		7.1				
7-Oct-14	4	22.8	7.48	6.3	278	120	102	0.55
		22.7	7.51	6.4	279			
MEAN		**22.8**	**7.39**	**6.6**	**272.6**	**112.0**	**90.0**	**0.80**
N=		**10**	**4**	**10**	**4**	**2**	**2**	**2**
Max #		**22.9**	**7.51**	**7.2**	**279**	**120**	**102**	**1.04**
Min #		**22.6**	**7.27**	**5.9**	**267**	**104**	**78**	**0.55**

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L)
MDL = Minimum Detection Limit (0.02 mg/L)
U = Below MDL
J = ≥MDL and <RL

Appendix B4
Overlying Water Quality Summaries

- 28-Day *Lumbriculus variegatus*
  October 08-November 05, 2014

Project Name: Stantec St. Louis River
2290-03

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: *Lumbriculus variegatus*

Date	Initials	Data Entry
12/31/14	DS	All

100% QC

Date	Initials	Data Entry
12/31/14	MGM	All

Errors highlighted in red

10% QC

Date	Initials	Data QC
01/20/15	MLV	10%

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.7	8.26	8.3	313.0	5.0	132	108	0.13	J
		22.8	8.29	8.4	315.0	4.8				
						4.8				
						5.4				
						4.6				
9-Oct-14	1	22.8		6.1		4.4				
		23.0		6.7		4.2				
						4.4				
						4.8				
						4.0				
10-Oct-14	2	22.8		6.4		4.0				
		23.0		6.1		3.8				
						3.8				
						4.0				
						3.8				
11-Oct-14	3	22.9		6.0		5.8				
		22.9		5.0		5.6				
						5.6				
						5.8				
						5.6				
12-Oct-14	4	22.9		5.5		4.6				
		23.0		6.0		4.8				
						4.4				
						5.0				
						4.6				
13-Oct-14	5	22.9		6.1		6.0				
		22.9		6.7		6.0				
						6.0				
						6.4				
						5.8				
14-Oct-14	6	23.1		6.6		5.6				
		23.2		6.1		5.4				
						6.0				
						5.6				
						5.4				
15-Oct-14	7	23.1	7.87	5.6	325.0	5.6	136	114	0.70	
		23.1	7.89	5.8	323.0	5.4				
						5.2				
						5.4				
						5.0				
16-Oct-14	8	23.5		6.8		5.2				
		23.6		6.3		5.0				
						5.0				
						5.0				
						4.2				
17-Oct-14	9	22.9		6.7		4.8				
		22.8		6.6		4.4				
						4.8				
						5.2				
						5.2				
18-Oct-14	10	22.7		7.2		4.8				
		22.7		6.9		4.5				
						4.4				
						5.2				
						4.6				
19-Oct-14	11	22.8		5.8		4.8				
		22.7		6.0		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						5.2				
						4.6				
20-Oct-14	12	22.6		6.9		4.4				
		22.6		6.8		4.6				
						4.4				
						4.4				
						4.6				
21-Oct-14	13	22.8		6.3		4.8				
		22.9		6.7		4.6				
						4.6				
						5.2				
						5.0				
22-Oct-14	14	22.8	7.88	7.0	314.0	4.8	128	104	0.58	
		22.9	7.94	7.3	313.0	4.4				
						4.4				
						5.2				
						4.8				
23-Oct-14	15	22.7		6.5		6.0				
		22.7		6.3		5.7				
						5.6				
						6.5				
						5.6				
24-Oct-14	16	23.0		6.8		5.4				
		23.0		6.8		5.4				
						5.6				
						5.6				
						5.6				
25-Oct-14	17	22.6		6.2		4.4				
		22.6		6.4		4.0				
						4.2				
						3.8				
						3.2				
26-Oct-14	18	22.7		6.9		3.6				
		22.7		6.7		4.0				
						4.1				
						4.0				
						3.5				
27-Oct-14	19	22.6		6.4		5.0				
		22.5		6.7		4.8				
						4.4				
						4.8				
						4.4				
28-Oct-14	20	22.9		6.5		4.2				
		22.8		6.4		4.0				
						3.8				
						3.6				
						3.6				
29-Oct-14	21	22.6	7.82	7.2	332.0	5.4	132.0	106	1.04	
		22.6	7.76	7.4	328.0	5.0				
						5.2				
						6.2				
						5.1				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.0		6.6		4.7				
		22.0		6.5		4.5				
						4.8				
						5.2				
						4.4				
31-Oct-14	23	22.0		6.6		4.5				
		22.0		7.0		4.4				
						4.3				
						4.8				
						4.0				
1-Nov-14	24	22.3		6.6		5.2				
		22.2		6.7		5.2				
						5.0				
						5.2				
						5.0				
2-Nov-14	25	22.4		7.0		5.0				
		22.4		6.7		5.2				
						5.2				
						5.2				
						5.0				
3-Nov-14	26	23.0		5.9		5.3				
		22.9		6.6		4.4				
						4.2				
						4.8				
						5.0				
4-Nov-14	27	22.9		6.7		5.0				
		23.0		6.6		4.9				
						5.4				
						3.9				
						4.6				
5-Nov-14	28	23.0	7.88	7.2	315.0	5.2	148	104	0.29	
		23.1	7.76	6.3	317.0	5.0				
						5.8				
						5.6				
						5.2				
Mean		**22.8**	**7.94**	**6.6**	**319.5**	**4.9**	**135.2**	**107.2**	**0.55**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**5**	
Max #		**23.6**	**8.29**	**8.4**	**332.0**	**6.5**	**148.0**	**114.0**	**1.04**	
Min#		**22.0**	**7.76**	**5.0**	**313.0**	**3.2**	**128.0**	**104.0**	**0.13**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1022-AT(15CM)
GLC ID: 10207

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.9	8.28	8.4	310.0	5.2	140	102	0.07	J
		22.9	8.26	8.4	310.0	4.6				
						4.8				
						5.2				
						5.0				
9-Oct-14	1	23.1		7.4		4.6				
		23.2		7.1		4.0				
						4.2				
						4.6				
						4.4				
10-Oct-14	2	23.0		6.9		3.8				
		23.0		7.0		3.6				
						3.4				
						4.0				
						3.6				
11-Oct-14	3	22.9		6.0		5.8				
		23.0		7.1		5.4				
						6.0				
						6.0				
						5.6				
12-Oct-14	4	23.0		7.0		4.6				
		23.1		7.2		4.0				
						4.6				
						4.8				
						4.4				
13-Oct-14	5	23.0		6.3		6.0				
		23.0		7.1		5.6				
						6.0				
						6.0				
						5.0				
14-Oct-14	6	23.2		6.7		5.6				
		23.2		7.0		5.2				
						5.8				
						5.8				
						4.6				
15-Oct-14	7	23.3	7.96	6.4	314.0	5.6	128	112	0.37	
		23.4	7.92	6.2	314.0	5.0			0.38	
						5.6				
						5.6				
						4.0				
16-Oct-14	8	23.6		6.5		4.6				
		23.7		7.0		4.8				
						5.2				
						5.0				
						5.0				
17-Oct-14	9	22.7		6.8		4.4				
		22.7		7.1		4.4				
						4.6				
						4.4				
						4.8				
18-Oct-14	10	22.6		7.0		4.8				
		22.6		7.1		4.2				
						4.6				
						4.8				
						4.8				
19-Oct-14	11	22.5		6.7		4.8				
		22.5		6.6		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1022-AT(15CM)
GLC ID: 10207

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						5				
						4.8				
20-Oct-14	12	22.7		6.6		4.8				
		22.6		6.9		4.8				
						4.4				
						4.4				
						4.6				
21-Oct-14	13	22.9		6.8		5.0				
		22.9		7.2		4.4				
						5.0				
						5.0				
						4.2				
22-Oct-14	14	22.8	7.83	6.5	305.0	5.2	120	100	0.46	
		22.8	7.97	7.5	305.0	4.4			0.42	
						4.4				
						4.8				
						4.4				
23-Oct-14	15	22.7		6.8		6.2				
		22.7		7.1		5.6				
						6.2				
						6.1				
						6.0				
24-Oct-14	16	23.0		6.8		5.6				
		23.0		7.0		5.6				
						5.6				
						5.8				
						5.6				
25-Oct-14	17	22.6		6.7		4.3				
		22.5		7.3		3.5				
						3.3				
						4.1				
						4.2				
26-Oct-14	18	22.7		7.1		3.9				
		22.7		6.7		3.6				
						4.0				
						3.5				
						3.7				
27-Oct-14	19	22.5		6.6		5.0				
		22.6		6.5		4.2				
						5.0				
						4.8				
						4.6				
28-Oct-14	20	22.7		6.6		4.4				
		22.7		6.6		3.8				
						4.2				
						4.4				
						4.2				
29-Oct-14	21	22.7	7.84	7.2	317.0	5.6	128.0	102	0.46	
		22.6	7.82	7.4	317.0	5.1	132.0	102	0.44	
						5.0				
						5.6				
						5.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1022-AT(15CM)
GLC ID: 10207

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.0		7.5		5.0				
		22.0		7.5		4.2				
						4.2				
						4.8				
						4.4				
31-Oct-14	23	22.0		7.1		4.6				
		22.0		7.8		3.8				
						3.8				
						4.4				
						4.0				
1-Nov-14	24	22.2		6.8		4.8				
		22.2		6.9		4.8				
						4.6				
						4.8				
						4.8				
2-Nov-14	25	22.4		6.8		5.0				
		22.5		6.8		4.4				
						4.4				
						4.4				
						5.0				
3-Nov-14	26	22.8		6.4		5.2				
		22.9		7.2		5.5				
						4.7				
						5.9				
						4.6				
4-Nov-14	27	23.0		7.0		5.2				
		23.0		7.1		4.6				
						4.6				
						5.0				
						4.8				
5-Nov-14	28	23.0	8.04	7.9	310.0	5.4	144	100	0.22	
		23.2	8.05	7.9	309.0	5.0			0.22	
						5.0				
						5.8				
						5.6				
Mean		**22.8**	**8.00**	**7.0**	**311.1**	**4.8**	**132.0**	**103.0**	**0.34**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**6**	**9**	
Max #		**23.7**	**8.28**	**8.4**	**317.0**	**6.2**	**144.0**	**112.0**	**0.46**	
Min#		**22.0**	**7.82**	**6.0**	**305.0**	**3.3**	**120.0**	**100.0**	**0.07**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1024-AT(15CM)
GLC ID: 10208

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.6	8.28	8.5	308.0	5.4	132	102	0.08	J
		22.7	8.27	8.5	308.0	6.2				
						5.4				
						6.0				
						5.6				
9-Oct-14	1	22.9		7.8		4.6				
		23.0		7.4		5.4				
						4.8				
						5.4				
						4.8				
10-Oct-14	2	22.9		7.3		4.0				
		23.0		6.6		4.8				
						4.2				
						4.8				
						4.6				
11-Oct-14	3	22.8		7.4		4.2				
		22.8		7.6		5.2				
						4.2				
						4.8				
						4.6				
12-Oct-14	4	22.7		6.7		3.8				
		22.9		6.4		4.8				
						4.6				
						4.6				
						4.2				
13-Oct-14	5	22.9		7.5		4.2				
		22.9		7.7		5.2				
						4.8				
						5.0				
						4.4				
14-Oct-14	6	23.0		6.9		5.6				
		23.1		5.9		6.8				
						6.4				
						6.0				
						6.4				
15-Oct-14	7	22.7	7.86	6.2	313.0	5.2	128	108	0.41	
		23.3	7.97	6.6	310.0	6.6	132			
						6.4				
						6.6				
						6.4				
16-Oct-14	8	23.4		7.4		4.6				
		23.5		6.9		6.0				
						5.2				
						5.6				
						5.6				
17-Oct-14	9	22.6		7.1		4.4				
		22.6		6.7		4.2				
						4.2				
						4.0				
						4.2				
18-Oct-14	10	22.4		7.3		3.4				
		22.5		7.1		4.6				
						3.6				
						4.4				
						4.2				
19-Oct-14	11	22.1		6.9		3.2				
		22.2		6.8		3.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1024-AT(15CM)
GLC ID: 10208

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						5.3				
						7				
						6.4				
20-Oct-14	12	22.6		7.1		4.4				
		22.5		7.4		4.4				
						4.4				
						4.6				
						4.6				
21-Oct-14	13	22.7		6.7		4.4				
		22.8		6.8		6.0				
						5.2				
						5.6				
						5.4				
22-Oct-14	14	22.6	7.86	7.1	298.2	4.0	124	104	0.37	
		22.7	8.01	7.9	298.7	4.8				
						4.8				
						5.4				
						4.8				
23-Oct-14	15	22.5		7.0		3.7				
		22.6		6.9		5.2				
						6.0				
						6.8				
						5.8				
24-Oct-14	16	22.8		7.1		4.4				
		22.8		7.9		4.2				
						4.2				
						4.4				
						4.4				
25-Oct-14	17	22.6		6.9		3.2				
		22.7		7.1		4.1				
						4.3				
						3.7				
						3.9				
26-Oct-14	18	22.6		6.9		3.3				
		22.7		6.9		3.7				
						4.0				
						3.5				
						3.8				
27-Oct-14	19	22.5		7.7		4.2				
		22.5		7.5		5.9				
						4.8				
						5.4				
						5.0				
28-Oct-14	20	22.8		7.7		4.2				
		22.7		7.5		5.4				
						4.6				
						4.8				
						4.2				
29-Oct-14	21	22.6	7.84	7.0	312.0	3.6	128.0	100	0.34	
		22.5	7.86	7.3	313.0	4.2				
						4.2				
						4.6				
						4.1				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1024-AT(15CM)
GLC ID: 10208

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.3		7.2		3.9				
		22.2		7.2		4.4				
						4.6				
						4.8				
						4.6				
31-Oct-14	23	22.2		8.0		3.7				
		22.1		7.5		4.2				
						4.2				
						4.5				
						3.8				
1-Nov-14	24	22.4		7.1		5.8				
		22.3		7.4		5.8				
						6.2				
						5.8				
						6.0				
2-Nov-14	25	22.7		7.0		5.6				
		22.7		7.2		6.0				
						6.0				
						6.4				
						6.2				
3-Nov-14	26	23.0		7.0		5.3				
		23.0		7.6		6.2				
						5.8				
						5.4				
						4.9				
4-Nov-14	27	23.0		7.0		4.6				
		23.0		7.0		5.0				
						5.0				
						4.5				
						5.0				
5-Nov-14	28	23.0	8.08	8.2	312.0	4.6	128	100	0.12	J
		23.2	7.91	7.4	308.0	5.0				
						4.8				
						5.0				
						5				
Mean		**22.7**	**7.99**	**7.2**	**308.1**	**4.9**	**128.7**	**102.8**	**0.26**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**5**	**5**	
Max #		**23.5**	**8.28**	**8.5**	**313.0**	**7.0**	**132.0**	**108.0**	**0.41**	
Min#		**22.1**	**7.84**	**5.9**	**298.2**	**3.2**	**124.0**	**100.0**	**0.08**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1032-AT (15CM)
GLC ID: 10209

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.8	8.29	8.5	308.0	5.6	128	100	0.09	J
		22.7	8.31	8.5	307.0	5.4	128			
						6.0				
						5.4				
						5.4				
9-Oct-14	1	23.0		7.4		4.8				
		23.1		7.0		4.6				
						5.0				
						4.8				
						4.6				
10-Oct-14	2	23.0		6.4		4.4				
		23.1		6.6		4.4				
						4.6				
						4.4				
						4.2				
11-Oct-14	3	22.9		7.4		4.6				
		22.9		7.3		4.4				
						4.4				
						4.4				
						4.4				
12-Oct-14	4	23.0		7.2		4.2				
		23.1		7.0		4.0				
						4.0				
						4.0				
						3.8				
13-Oct-14	5	23.0		7.9		4.4				
		23.0		7.7		4.2				
						4.2				
						4.2				
						4.0				
14-Oct-14	6	23.1		6.9		6.4				
		23.2		6.9		6.0				
						6.4				
						6.0				
						6.2				
15-Oct-14	7	23.2	8.02	6.9	310.0	6.4	128	110	0.46	
		23.3	8.08	7.2	310.0	5.8		110		
						6.0				
						5.6				
						5.6				
16-Oct-14	8	23.4		7.1		5.2				
		23.5		6.9		5.0				
						5.2				
						5.0				
						4.8				
17-Oct-14	9	22.6		7.0		4.0				
		22.6		6.9		3.8				
						4.0				
						4.2				
						4.0				
18-Oct-14	10	22.4		7.3		4.0				
		22.5		7.2		3.8				
						4.2				
						3.2				
						3.8				
19-Oct-14	11	22.3		7.3		7.0				
		22.4		7.4		4.8				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1032-AT (15CM)
GLC ID: 10209

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						5.2				
						3.3				
						4.6				
20-Oct-14	12	22.5		7.5		4.4				
		22.6		7.4		4.4				
						4.4				
						4.0				
						4.2				
21-Oct-14	13	22.9		7.5		5.8				
		22.9		7.2		5.2				
						5.4				
						4.8				
						4.2				
22-Oct-14	14	22.7	8.03	7.9	302.0	5.4	124	98	0.35	
		22.7	8.02	7.9	301.0	5.0				
						5.2				
						5.0				
						4.0				
23-Oct-14	15	22.6		6.9		6.6				
		22.6		7.2		4.2				
						4.6				
						4.2				
						3.8				
24-Oct-14	16	22.8		7.6		4.2				
		22.8		7.8		4.2				
						4.0				
						4.0				
						4.0				
25-Oct-14	17	22.7		7.5		4.0				
		22.8		7.1		3.8				
						3.2				
						3.9				
						3.5				
26-Oct-14	18	22.5		7.0		3.7				
		22.6		7.2		3.7				
						3.4				
						3.6				
						3.9				
27-Oct-14	19	22.6		7.3		5.6				
		22.8		7.1		4.8				
						4.6				
						4.8				
						4.2				
28-Oct-14	20	22.7		7.5		4.8				
		22.7		7.4		4.2				
						4.2				
						4.1				
						4.4				
29-Oct-14	21	22.6	8.00	7.4	314.0	4.5	140.0	100	0.43	
		22.6	8.05	7.3	315.0	3.8				
						3.8				
						4.3				
						4.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1032-AT (15CM)
GLC ID: 10209

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.0		7.9		5.0				
		22.0		7.8		4.2				
						4.4				
						4.0				
						3.4				
31-Oct-14	23	22.0		8.1		4.5				
		22.0		8.1		3.9				
						3.8				
						3.6				
						3.1				
1-Nov-14	24	22.3		7.1		6.2				
		22.3		7.1		6.0				
						6.0				
						6.0				
						5.8				
2-Nov-14	25	22.8		7.4		6.2				
		22.7		7.2		6.4				
						6.2				
						5.8				
						5.6				
3-Nov-14	26	22.8		7.7		6.8				
		22.8		7.8		5.0				
						6.9				
						6.2				
						6.4				
4-Nov-14	27	23.0		7.6		5.8				
		22.9		7.6		4.0				
						4.8				
						4.6				
						4.0				
5-Nov-14	28	23.0	8.12	8.2	309.0	5.2	132	100	0.18	J
		23.2	8.04	7.9	309.0	4.0				
						4.8				
						4.8				
						4.4				
Mean		**22.8**	**8.10**	**7.4**	**308.5**	**4.7**	**130.0**	**103.0**	**0.30**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**6**	**5**	
Max #		**23.5**	**8.31**	**8.5**	**315.0**	**7.0**	**140.0**	**110.0**	**0.46**	
Min#		**22.0**	**8.00**	**6.4**	**301.0**	**3.1**	**124.0**	**98.0**	**0.09**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1021-AT (15CM)
GLC ID: 10210

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.8	8.31	8.5	310.0	6.4	132	104	0.09	J
		22.7	8.32	8.6	309.0	6.4		102		
						5.2				
						5.4				
						5.6				
9-Oct-14	1	22.7		7.4		4.6				
		22.6		6.9		4.6				
						4.8				
						5.0				
						5.0				
10-Oct-14	2	22.5		6.7		4.8				
		22.6		6.8		4.8				
						4.8				
						5.2				
						5.0				
11-Oct-14	3	22.7		7.1		5.6				
		22.7		7.3		5.6				
						5.6				
						6.0				
						5.8				
12-Oct-14	4	22.9		7.4		5.2				
		22.7		7.0		5.2				
						5.2				
						5.6				
						5.2				
13-Oct-14	5	22.8		7.2		5.0				
		22.9		7.2		4.8				
						5.0				
						5.6				
						5.2				
14-Oct-14	6	22.7		6.5		4.8				
		22.8		6.6		4.6				
						4.8				
						5.0				
						5.0				
15-Oct-14	7	23.3	8.03	6.8	313.0	4.6	128	112	0.46	
		23.2	8.00	6.7	313.0	4.6				
						4.6				
						5.0				
						5.0				
16-Oct-14	8	22.9		6.5		4.4				
		23.0		6.7		4.4				
						4.4				
						5.0				
						4.4				
17-Oct-14	9	22.7		6.4		4.2				
		22.7		6.8		4.2				
						4.2				
						4.0				
						4.2				
18-Oct-14	10	22.1		7.7		4.4				
		22.2		7.3		4.4				
						4.4				
						4.8				
						5.0				
19-Oct-14	11	22.5		7.7		4.4				
		22.5		7.5		4.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1021-AT (15CM)
GLC ID: 10210

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.4				
						4.8				
						4.8				
20-Oct-14	12	22.5		7.2		4.4				
		22.5		7.4		4.4				
						4.4				
						4.4				
						5.0				
21-Oct-14	13	22.8		7.2		5.6				
		22.5		7.2		5.6				
						5.8				
						6.2				
						6.0				
22-Oct-14	14	22.6	7.96	7.4	304.0	5.4	124	102	0.31	
		22.7	8.00	7.7	301.0	5.4				
						5.8				
						6.0				
						5.4				
23-Oct-14	15	22.8		7.2		5.3				
		22.7		7.0		5.2				
						5.4				
						5.6				
						4.9				
24-Oct-14	16	22.8		7.7		4.0				
		22.8		7.9		4.0				
						4.2				
						4.2				
						4.4				
25-Oct-14	17	22.7		7.1		4.2				
		22.7		6.5		3.8				
						4.1				
						3.6				
						3.4				
26-Oct-14	18	22.7		6.9		5.1				
		22.7		6.8		5.3				
						4.9				
						4.7				
						4.5				
27-Oct-14	19	22.7		7.5		4.6				
		22.5		7.6		4.8				
						4.8				
						5.0				
						4.5				
28-Oct-14	20	22.5		7.5		4.8				
		22.6		7.7		5.2				
						5.1				
						5.4				
						4.8				
29-Oct-14	21	22.5	7.90	7.7	316.0	4.6	136	104	0.38	
		22.5	7.96	7.4	317.0	4.6				
						5.0				
						5.2				
						4.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1021-AT (15CM)
GLC ID: 10210

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.4		7.2		4.5				
		22.5		7.5		4.6				
						4.8				
						5.0				
						4.4				
31-Oct-14	23	22.4		7.7		4.5				
		22.4		7.8		4.6				
						4.6				
						4.8				
						4.5				
1-Nov-14	24	22.3		7.0		4.8				
		22.2		6.8		4.4				
						4.4				
						4.6				
						4.8				
2-Nov-14	25	22.9		7.7		5.0				
		22.9		7.3		5.2				
						4.8				
						4.8				
						4.4				
3-Nov-14	26	22.9		7.3		4.4				
		23.0		7.4		5.2				
						5.8				
						6.1				
						4.9				
4-Nov-14	27	23.1		7.5		6.0				
		23.2		7.0		6.0				
						6.0				
						6.4				
						5.8				
5-Nov-14	28	23.4	8.03	7.8	312.0	5.0	148	102	0.15	J
		23.3	7.99	7.6	314.0	4.6				
						4.6				
						5.0				
						5.0				
Mean		**22.7**	**8.05**	**7.3**	**310.9**	**4.9**	**133.6**	**104.3**	**0.28**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**6**	**5**	
Max #		**23.4**	**8.32**	**8.6**	**317.0**	**6.4**	**148.0**	**112.0**	**0.46**	
Min#		**22.1**	**7.90**	**6.4**	**301.0**	**3.4**	**124.0**	**102.0**	**0.09**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1026-AT (15CM)
GLC ID: 10212

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.6	8.27	8.5	308.0	5.0	132	104	0.11	J
		22.6	8.28	8.6	306.0	5.2			0.12	J
						5.4				
						5.0				
						4.6				
9-Oct-14	1	22.7		7.5		4.4				
		22.7		6.9		4.8				
						4.8				
						4.2				
						4.0				
10-Oct-14	2	22.8		6.7		4.6				
		22.8		5.9		4.8				
						4.8				
						4.2				
						3.8				
11-Oct-14	3	22.6		7.3		5.8				
		22.6		7.3		5.8				
						6.0				
						5.6				
						5.2				
12-Oct-14	4	22.7		6.9		4.8				
		22.5		6.5		5.4				
						5.6				
						5.2				
						4.6				
13-Oct-14	5	22.8		7.3		4.6				
		22.7		7.4		5.0				
						5.0				
						4.8				
						3.8				
14-Oct-14	6	22.8		6.8		4.4				
		22.8		5.4		4.6				
						4.6				
						4.8				
						3.6				
15-Oct-14	7	23.1	7.93	6.7	310.0	4.6	124	108	0.69	
		23.0	7.99	6.9	309.0	4.6				
						4.6				
						4.4				
						3.4				
16-Oct-14	8	22.8		6.9		4.0				
		22.6		7.0		4.4				
						4.4				
						4.0				
						3.6				
17-Oct-14	9	22.8		6.8		4.2				
		22.7		6.7		4.2				
						4.0				
						4.0				
						4.0				
18-Oct-14	10	22.1		7.6		4.2				
		22.2		7.5		4.4				
						4.6				
						4.2				
						4.6				
19-Oct-14	11	22.2		7.4		4.4				
		22.2		7.2		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1026-AT (15CM)
GLC ID: 10212

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.0				
						3.2				
20-Oct-14	12	22.6		7.5		4.4				
		22.6		7.5		4.6				
						4.6				
						4.6				
						4.8				
21-Oct-14	13	22.5		7.4		5.6				
		22.3		7.2		5.8				
						6.2				
						5.6				
						5.0				
22-Oct-14	14	22.4	7.99	7.8	303.0	5.0	132	100	0.50	
		22.4	8.00	7.9	302.0	5.6				
						5.6				
						5.2				
						4.6				
23-Oct-14	15	22.7		7.8		5.0				
		22.7		7.7		5.2				
						5.6				
						5.0				
						4.4				
24-Oct-14	16	22.7		6.9		4.0				
		22.8		7.1		4.0				
						4.0				
						3.8				
						4.0				
25-Oct-14	17	22.6		6.9		3.8				
		22.7		7.1		4.2				
						4.1				
						3.7				
						3.9				
26-Oct-14	18	22.8		6.7		7.0				
		22.7		6.8		6.7				
						6.9				
						6.9				
						6.9				
27-Oct-14	19	22.6		6.7		4.1				
		22.5		6.8		4.4				
						5.2				
						4.8				
						3.8				
28-Oct-14	20	22.6		7.6		5.0				
		22.6		7.6		4.8				
						5.2				
						4.8				
						3.8				
29-Oct-14	21	22.5	7.97	7.4	315.0	4.7	136.0	104	0.41	
		22.5	8.03	7.4	315.0	4.6				
						5.0				
						4.6				
						3.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1026-AT (15CM)
GLC ID: 10212

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.8		7.8		4.5				
		22.4		7.7		4.4				
						5.0				
						4.6				
						3.5				
31-Oct-14	23	22.5		8.0		4.2				
		22.4		7.9		4.4				
						4.8				
						4.6				
						3.4				
1-Nov-14	24	22.2		7.2		4.4				
		22.2		7.0		4.6				
						4.6				
						4.8				
						4.6				
2-Nov-14	25	22.8		7.5		4.6				
		22.9		7.7		4.4				
						4.4				
						4.2				
						4.2				
3-Nov-14	26	22.8		7.5		4.8				
		22.7		7.5		4.6				
						4.9				
						4.7				
						4.5				
4-Nov-14	27	23.2		7.4		6.0				
		22.9		7.5		6.0				
						6.8				
						6.4				
						5.5				
5-Nov-14	28	23.0	8.13	8.2	308.0	5.0	148	102	0.16	J
		22.9	8.04	7.9	318.0	4.8				
						4.8				
						5.2				
						4.2				
Mean		**22.6**	**8.06**	**7.3**	**309.4**	**4.7**	**134.4**	**103.6**	**0.33**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.2**	**8.28**	**8.6**	**318.0**	**7.0**	**148.0**	**108.0**	**0.69**	
Min#		**22.1**	**7.93**	**5.4**	**302.0**	**3.2**	**124.0**	**100.0**	**0.11**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1028-AT (15CM)
GLC ID: 10213

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.6	8.32	8.5	310.0	5.4	144	106	0.11	J
		22.7	8.22	8.4	310.0	5.6				
						5.0				
						5.8				
						5.6				
9-Oct-14	1	22.9		5.4		6.2				
		22.9		6.5		6.4				
						6.6				
						6.0				
						5.8				
10-Oct-14	2	22.8		6.4		5.4				
		22.9		6.4		5.8				
						5.2				
						5.8				
						5.8				
11-Oct-14	3	22.9		5.3		5.4				
		22.8		5.9		5.8				
						6.2				
						5.0				
						5.8				
12-Oct-14	4	23.0		7.3		5.6				
		22.9		6.5		6.0				
						6.0				
						5.0				
						6.0				
13-Oct-14	5	23.0		7.1		5.4				
		22.9		6.9		5.6				
						5.8				
						5.0				
						5.4				
14-Oct-14	6	22.9		6.2		5.2				
		23.0		6.4		5.4				
						5.6				
						4.4				
						5.6				
15-Oct-14	7	23.4	8.06	7.1	314.0	5.2	128	110	0.59	
		23.3	8.00	6.7	313.0	5.2				
						5.6				
						5.0				
						5.6				
16-Oct-14	8	23.0		6.9		5.0				
		23.0		6.6		5.0				
						5.4				
						4.2				
						6.0				
17-Oct-14	9	22.8		6.9		4.4				
		22.8		6.9		4.4				
						5.2				
						4.8				
						4.8				
18-Oct-14	10	22.3		7.7		5.2				
		22.5		7.5		5.6				
						5.8				
						4.8				
						5.2				
19-Oct-14	11	22.4		7.6		5.2				
		22.5		7.6		5.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1028-AT (15CM)
GLC ID: 10213

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						5.6				
						4.4				
						5.2				
20-Oct-14	12	22.6		7.5		4.4				
		22.6		7.4		4.8				
						5.2				
						5.2				
						4.6				
21-Oct-14	13	22.8		7.7		5.0				
		22.7		7.1		5.2				
						5.4				
						4.8				
						5.2				
22-Oct-14	14	22.6	8.02	7.8	306.0	5.0	136	104	0.44	
		22.6	8.00	7.7	306.0	5.4		104		
						5.4				
						4.8				
						5.0				
23-Oct-14	15	22.8		6.8		4.6				
		22.8		7.1		5.0				
						5.2				
						4.2				
						4.8				
24-Oct-14	16	22.8		7.7		4.0				
		22.8		7.6		4.4				
						4.4				
						4.4				
						4.2				
25-Oct-14	17	22.9		6.6		3.5				
		22.9		7.2		3.7				
						3.5				
						3.9				
						4.1				
26-Oct-14	18	22.6		6.7		6.9				
		22.6		7.0		7.0				
						6.8				
						6.7				
						6.8				
27-Oct-14	19	22.6		6.9		5.0				
		22.5		6.9		5.2				
						5.6				
						5.0				
						5.0				
28-Oct-14	20	22.5		7.3		4.6				
		22.5		7.1		4.6				
						5.2				
						4.4				
						4.7				
29-Oct-14	21	22.7	7.87	7.4	316.0	4.4	124.0	100	0.43	
		22.5	8.01	7.4	317.0	4.6				
						5.0				
						4.2				
						4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1028-AT (15CM)
GLC ID: 10213

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.1		7.6		5.6				
		22.4		7.3		5.6				
						5.8				
						5.0				
						5.8				
31-Oct-14	23	22.0		7.9		5.2				
		22.0		7.8		5.2				
						5.4				
						4.6				
						5.3				
1-Nov-14	24	22.2		7.0		5.2				
		22.2		7.3		5.2				
						5.0				
						5.4				
						5.0				
2-Nov-14	25	22.9		7.6		6.6				
		22.9		7.4		6.8				
						6.8				
						6.6				
						6.4				
3-Nov-14	26	22.7		7.5		6.9				
		22.6		7.3		7.0				
						6.6				
						6.7				
						6.5				
4-Nov-14	27	23.0		7.8		6.0				
		23.0		7.4		5.8				
						6.2				
						5.4				
						6.2				
5-Nov-14	28	23.0	8.02	7.8	309.0	6.0	148	104	0.16	J
		23.1	7.95	7.2	311.0	6.0				
						6.2				
						5.8				
						6.0				
Mean		**22.7**	**8.05**	**7.1**	**311.2**	**5.4**	**136.0**	**104.7**	**0.35**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**6**	**5**	
Max #		**23.4**	**8.32**	**8.5**	**317.0**	**7.0**	**148.0**	**110.0**	**0.59**	
Min#		**22.0**	**7.87**	**5.3**	**306.0**	**3.5**	**124.0**	**100.0**	**0.11**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1025-AT (15 CM)
GLC ID: 10214

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
8-Oct-14	0	22.4	8.20	8.6	310.0	5.6	140	102	0.08	J
		22.5	8.26	8.5	309.0	5.0				
						5.2				
						5.0				
						5.0				
9-Oct-14	1	22.8		4.6		5.6				
		22.6		6.2		5.2				
						5.2				
						5.2				
						4.8				
10-Oct-14	2	22.9		5.7		5.8				
		22.9		6.3		5.2				
						5.6				
						5.0				
						5.0				
11-Oct-14	3	22.8		6.2		6.0				
		22.7		4.0		5.2				
						5.6				
						5.2				
						5.2				
12-Oct-14	4	22.7		5.8		6.0				
		22.7		6.0		5.2				
						5.2				
						5.0				
						5.2				
13-Oct-14	5	22.9		5.8		5.4				
		22.8		6.9		5.0				
						5.0				
						4.8				
						5.0				
14-Oct-14	6	22.9		5.4		5.8				
		22.9		6.4		4.8				
						4.6				
						4.8				
						4.6				
15-Oct-14	7	23.0	7.72	4.8	313.0	5.2	128	110	0.53	
		23.0	7.79	5.6	311.0	4.6				
						4.8				
						4.4				
						4.6				
16-Oct-14	8	23.0		5.7		5.6				
		23.0		6.5		4.4				
						4.4				
						4.6				
						4.8				
17-Oct-14	9	22.8		6.7		4.6				
		22.7		6.6		4.4				
						4.8				
						4.4				
						4.4				
18-Oct-14	10	22.3		6.3		5.4				
		22.4		6.5		4.6				
						4.6				
						4.4				
						4.6				
19-Oct-14	11	22.2		5.9		5.2				
		22.2		6.2		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1025-AT (15 CM)
GLC ID: 10214

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.4				
						4.8				
20-Oct-14	12	22.6		7.3		4.4				
		22.6		7.4		4.6				
						4.6				
						5.0				
						5.2				
21-Oct-14	13	22.6		5.8		5.6				
		22.4		6.9		5.0				
						4.8				
						4.6				
						4.6				
22-Oct-14	14	22.4	7.77	6.5	304.0	5.2	128	100	0.48	
		22.5	7.96	7.7	302.0	4.6	132			
						4.6				
						4.6				
						4.8				
23-Oct-14	15	22.8		6.8		5.0				
		22.8		6.7		4.4				
						4.4				
						4.3				
						4.4				
24-Oct-14	16	22.7		6.7		4.4				
		22.8		6.8		4.2				
						4.2				
						4.0				
						4.0				
25-Oct-14	17	22.7		7.1		3.6				
		22.7		7.0		3.5				
						3.2				
						3.3				
						3.5				
26-Oct-14	18	22.6		6.9		4.6				
		22.6		6.8		5.2				
						5.2				
						4.4				
						4.6				
27-Oct-14	19	22.7		7.1		5.2				
		22.5		7.4		4.6				
						4.8				
						4.6				
						5.0				
28-Oct-14	20	22.6		7.2		4.6				
		22.6		7.2		4.2				
						4.4				
						4.1				
						4.4				
29-Oct-14	21	22.6	7.65	7.4	318.0	4.2	140.0	100	0.52	
		22.7	7.77	7.5	316.0	4.0				
						4.0				
						3.8				
						4.3				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1025-AT (15 CM)
GLC ID: 10214

Test Dates: October 8-November 5, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
30-Oct-14	22	22.4		6.0		5.8				
		22.5		7.3		5.2				
						5.0				
						5.0				
						5.2				
31-Oct-14	23	22.2		6.8		5.4				
		22.5		7.8		4.8				
						4.8				
						4.8				
						5.0				
1-Nov-14	24	22.4		7.0		4.8				
		22.2		6.8		4.8				
						5.0				
						5.2				
						5.0				
2-Nov-14	25	22.9		7.5		5.8				
		22.9		7.1		5.6				
						5.8				
						5.0				
						5.2				
3-Nov-14	26	23.0		6.5		7.0				
		23.1		7.4		6.6				
						6.7				
						6.9				
						6.5				
4-Nov-14	27	23.1		6.0		6.0				
		22.9		5.7		5.4				
						5.7				
						5.4				
						5.2				
5-Nov-14	28	22.9	8.08	8.0	309.0	5.8	152	100	0.23	
		22.8	7.96	7.3	311.0	5.6				
						5.6				
						5.2				
						5.0				
Mean		**22.7**	**7.92**	**6.6**	**310.3**	**4.9**	**136.7**	**102.4**	**0.37**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**5**	**5**	
Max #		**23.1**	**8.26**	**8.6**	**318.0**	**7.0**	**152.0**	**110.0**	**0.53**	
Min#		**22.2**	**7.65**	**4.0**	**302.0**	**3.2**	**128.0**	**100.0**	**0.08**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Appendix B5
Overlying Water Quality Summaries

- 28-Day *Lumbriculus variegatus*
  October 22-November 19, 2014

Project Name: Stantec St. Louis River
2290-03

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: *Lumbriculus variegatus*

Date	Initials	Data Entry
	KS	control-10218
01/20/15	MLV	10219-10221

100% QC

Date	Initials	Data Entry
01/28/15	DS	ALL

10% QC

Date	Initials	Data QC
01/29/15	KS	ALL

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	22.7	8.25	8.6	312.0	5.6	132	106	0.32	
		22.9	8.25	9.0	312.0	5.2				
						5.2				
						5.8				
						5.4				
23-Oct-14	1	22.8		7.3		4.8				
		22.8		7.0		4.4				
						4.4				
						4.4				
						4.0				
24-Oct-14	2	23.2		6.8		5.4				
		23.2		6.5		5.4				
						5.6				
						5.6				
						5.6				
25-Oct-14	3	22.9		7.2		4.0				
		23.0		7.0		3.9				
						4.1				
						3.8				
						3.5				
26-Oct-14	4	22.8		6.7		7.0				
		22.8		6.7		6.9				
						7.0				
						6.8				
						6.8				
27-Oct-14	5	22.6		6.8		5.4				
		22.7		6.9		5.4				
						5.0				
						5.5				
						5.4				
28-Oct-14	6	22.8		7.2		5.2				
		22.8		7.0		5				
						4.8				
						5.2				
						5				
29-Oct-14	7	22.8	7.89	7.3	328.0	5.2	140	104	0.97	
		22.8	7.92	7.1	325.0	4.8				
						4.8				
						5.0				
						4.8				
30-Oct-14	8	22.6		7.1		4.8				
		22.7		7.0		4.6				
						4.6				
						4.8				
						4.8				
31-Oct-14	9	22.7		7.0		4.5				
		22.6		6.9		4.5				
						4.4				
						4.6				
						4.8				
1-Nov-14	10	22.2		6.7		6.0				
		22.3		6.8		6.2				
						6.2				
						6.0				
						5.8				
2-Nov-14	11	22.3		7.0		6.2				
		22.4		7.2		6.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						6.0				
						5.8				
						5.2				
3-Nov-14	12	23.0		6.6		5.7				
		22.9		6.6		5.6				
						5.2				
						5.8				
						5.4				
4-Nov-14	13	22.8		6.7		5.2				
		22.8		6.8		5.0				
						5.0				
						5.4				
						5.5				
5-Nov-14	14	22.6	7.80	7.5	309.0	4.0	140	96	0.54	
		22.6	7.83	7.6	308.0	3.8				
						4.2				
						4.2				
						4.2				
6-Nov-14	15	22.7		7.3		5.2				
		22.8		7.1		5.0				
						4.8				
						5.4				
						5.2				
7-Nov-14	16	22.5		6.8		3.6				
		22.5		7.0		3.2				
						3.2				
						3.6				
						3.6				
8-Nov-14	17	22.9		7.1		5.4				
		23.0		7.4		4.8				
						5.0				
						5.0				
						5.4				
9-Nov-14	18	23.1		7.3		5.0				
		23.3		7.1		5.0				
						5.0				
						5.2				
						5.2				
10-Nov-14	19	23.1		7.2		5.4				
		23.2		7.1		4.6				
						5.0				
						5.4				
						4.7				
11-Nov-14	20	23.0		6.8		3.9				
		23.1		6.9		4.0				
						4.5				
						5.0				
						5.2				
12-Nov-14	21	23.1	7.99	7.3	322.0	5.6	128.0	100	0.61	
		23.1	7.97	7.3	321.0	5.6				
						5.8				
						6.2				
						6.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 124

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.6		7.0		4.6				
		22.6		6.8		4.4				
						4.4				
						4.8				
						5.1				
14-Nov-14	23	22.9		7.2		3.8				
		23.0		7.2		3.6				
						3.6				
						3.8				
						4.2				
15-Nov-14	24	22.9		7.6		4.3				
		22.9		7.6		4.0				
						4.0				
						4.4				
						4.6				
16-Nov-14	25	23.0		7.1		4.1				
		23.0		7.3		3.8				
						3.9				
						3.9				
						4.4				
17-Nov-14	26	22.5		6.5		3.6				
		22.5		6.0		3.6				
						3.2				
						4.0				
						4.0				
18-Nov-14	27	23.0		6.7		4.2				
		23.0		7.1		4.3				
						4.3				
						4.4				
						4.6				
19-Nov-14	28	22.9	7.83	7.6	321.0	3.2	140	100	0.18	J
		22.9	7.93	7.7	320.0	4.4				
						5.0				
						4.4				
						4.2				
Mean		**22.8**	**7.97**	**7.1**	**317.8**	**4.8**	**136.0**	**101.2**	**0.52**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**5**	
Max #		**23.3**	**8.25**	**9.0**	**328.0**	**7.0**	**140**	**106**	**0.97**	
Min#		**22.2**	**7.80**	**6.0**	**308.0**	**3.2**	**128**	**96**	**0.18**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1010-AT(15CM)
GLC ID: 10215

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	22.6	8.25	8.6	301.0	5.4	128	100	0.04	J
		22.8	8.24	8.4	299.7	5.6	124	100		
						6.0				
						5.8				
						4.8				
23-Oct-14	1	22.8		7.1		4.6				
		22.8		7.1		4.6				
						5.2				
						4.8				
						4				
24-Oct-14	2	23.1		7.0		4				
		23.2		7.1		4.4				
						4.6				
						4.4				
						3.5				
25-Oct-14	3	23.0		6.8		3.9				
		23.0		6.7		3.4				
						3.7				
						4				
						3.8				
26-Oct-14	4	22.9		6.6		6.6				
		22.8		6.9		6.8				
						6.7				
						7				
						6.9				
27-Oct-14	5	22.6		6.8		5.2				
		22.6		6.9		5.8				
						6				
						5.8				
						4.6				
28-Oct-14	6	22.8		7.4		5				
		22.8		7.3		5.4				
						5.6				
						5.5				
						4.2				
29-Oct-14	7	22.8	7.93	7.0	310.0	4.8	124	100	0.62	
		22.8	7.90	7.5	311.0	5.4			0.62	
						5.6				
						5.2				
						4.2				
30-Oct-14	8	22.7		7.1		4.6				
		22.7		6.9		5.2				
						5.2				
						5.2				
						4.2				
31-Oct-14	9	22.5		7.3		4.4				
		22.6		7.0		5.0				
						5.2				
						4.9				
						3.9				
1-Nov-14	10	22.3		7.0		5.8				
		22.3		7.0		6.0				
						6.0				
						6.2				
						6.2				
2-Nov-14	11	22.4		6.9		4.4				
		22.3		7.2		6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1010-AT(15CM)
GLC ID: 10215

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						6				
						5.2				
						5				
3-Nov-14	12	22.4		7.0		5.2				
		22.4		6.9		5.6				
						6.4				
						6.1				
						5.8				
4-Nov-14	13	22.7		7.1		4.6				
		22.7		7.0		5.6				
						5.7				
						5.5				
						4.2				
5-Nov-14	14	22.6	7.93	7.8	322.0	4.0	136	98	0.41	
		22.7	7.93	7.7	319.0	4.0				
						3.8				
						4.0				
						4.0				
6-Nov-14	15	22.6		7.5		4.8				
		22.7		7.4		5.4				
						5.4				
						5.4				
						4.6				
7-Nov-14	16	22.5		7.5		3.6				
		22.5		7.6		3.6				
						4.0				
						3.6				
						3.0				
8-Nov-14	17	22.9		7.3		5.0				
		23.0		7.4		5.6				
						5.8				
						5.4				
						5.0				
9-Nov-14	18	23.3		7.5		4.6				
		23.3		7.4		5.6				
						5.6				
						5.6				
						4.6				
10-Nov-14	19	23.1		7.6		5.7				
		23.0		6.8		5.4				
						5.6				
						5.8				
						5.3				
11-Nov-14	20	23.1		7.1		5.1				
		23.0		7.7		4.9				
						5.2				
						5.5				
						4.8				
12-Nov-14	21	23.1	7.99	7.7	308.0	5.0	136.0	100	0.32	
		23.0	7.97	7.5	306.0	6.2		100		
						6.6				
						6.2				
						6.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1010-AT(15CM)
GLC ID: 10215

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.6		7.0		4.0				
		22.5		7.0		5.3				
						5.2				
						4.9				
						4.8				
14-Nov-14	23	22.9		7.5		3.5				
		23.0		7.5		4.4				
						4.5				
						4.1				
						4.2				
15-Nov-14	24	22.9		7.8		3.8				
		22.9		7.8		4.8				
						4.9				
						4.6				
						4.7				
16-Nov-14	25	23.0		7.5		4.3				
		23.0		7.2		4.5				
						4.1				
						3.9				
						4.6				
17-Nov-14	26	22.6		7.4		3.6				
		22.6		7.6		4.4				
						4.4				
						3.0				
						4.8				
18-Nov-14	27	22.9		7.5		4.6				
		22.9		7.5		5.0				
						5.0				
						4.8				
						4.7				
19-Nov-14	28	23.5	7.94	7.5	310.0	3.4	136	98	0.14	J
		23.5	7.94	7.3	312.0	3.8				
						4.0				
						3.6				
						4.4				
Mean		**22.8**	**8.00**	**7.3**	**309.9**	**4.9**	**130.7**	**99.4**	**0.36**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**7**	**6**	
Max #		**23.5**	**8.25**	**8.6**	**322.0**	**7.0**	**136**	**100**	**0.62**	
Min#		**22.3**	**7.90**	**6.6**	**299.7**	**3.0**	**124**	**98**	**0.04**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1029-AT(15CM)
GLC ID: 10216

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	22.6	8.34	8.4	317.0	6.0	148	108	0.12	J
		22.6	8.32	8.2	320.0	5.4				
						6.2				
						6.0				
						6.0				
23-Oct-14	1	22.7		7.3		5.3				
		22.8		7.4		4.8				
						5.4				
						5.3				
						5.4				
24-Oct-14	2	23.0		7.0		4.8				
		23.1		7.1		4.4				
						5.1				
						5.0				
						5.2				
25-Oct-14	3	22.8		7.4		4.2				
		22.8		7.6		4.3				
						4.1				
						3.9				
						3.6				
26-Oct-14	4	22.8		7.2		5.5				
		22.9		6.9		5.6				
						4.9				
						5.4				
						5.5				
27-Oct-14	5	22.6		6.4		4.8				
		22.7		6.8		4.4				
						5.2				
						5.1				
						4.7				
28-Oct-14	6	22.8		7.3		5.2				
		22.8		7.1		4.4				
						4.7				
						5.2				
						5.3				
29-Oct-14	7	22.7	8.10	7.1	334.0	4.4	140	110	0.96	
		22.8	7.98	7.4	335.0	4.0	140	108		
						4.4				
						4.6				
						4.8				
30-Oct-14	8	22.8		7.2		3.9				
		22.8		7.0		3.5				
						4.2				
						4.2				
						4.4				
31-Oct-14	9	22.6		7.1		4.0				
		22.8		7.1		3.2				
						4.0				
						4.0				
						4.1				
1-Nov-14	10	22.3		7.2		4.2				
		22.3		7.0		4.4				
						4.4				
						4.2				
						4.2				
2-Nov-14	11	22.6		7.4		4				
		22.5		7.1		4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1029-AT(15CM)
GLC ID: 10216

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.2				
						4.2				
						4				
3-Nov-14	12	22.4		6.4		5.8				
		22.6		7.3		5.4				
						5.6				
						6.1				
						4.8				
4-Nov-14	13	22.7		7.1		5.2				
		22.7		7.4		4.4				
						5.5				
						5.5				
						5.6				
5-Nov-14	14	22.6	7.89	7.5	312.0	4.4	152	106	0.41	
		22.6	7.94	7.7	316.0	4.6				
						4.4				
						4.8				
						4.8				
6-Nov-14	15	22.3		6.5		4.8				
		22.6		6.9		4.6				
						5.6				
						6.0				
						5.6				
7-Nov-14	16	22.5		7.8		4.2				
		22.4		7.7		3.2				
						4.8				
						4.2				
						5.2				
8-Nov-14	17	23.1		6.7		4.6				
		23.2		7.0		4.4				
						5.0				
						5.0				
						5.2				
9-Nov-14	18	23.2		7.3		4.4				
		23.3		6.7		4.4				
						4.8				
						4.8				
						5.4				
10-Nov-14	19	22.9		7.5		4.4				
		22.9		6.8		3.6				
						3.2				
						4.1				
						3.8				
11-Nov-14	20	23.0		7.2		4.8				
		22.9		7.3		3.9				
						3.4				
						4.2				
						3.9				
12-Nov-14	21	22.8	7.99	7.5	317.0	4.6	132.0	98	0.17	J
		23.0	7.90	7.1	320.0	4.6	132.0			
						5.6				
						5.2				
						6.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1029-AT(15CM)
GLC ID: 10216

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.5		6.7		4.4				
		22.6		6.9		4.6				
						4.4				
						4.1				
						4.8				
14-Nov-14	23	23.1		7.8		4.5				
		23.3		7.5		4.8				
						5.0				
						4.6				
						5.0				
15-Nov-14	24	22.8		7.6		5.0				
		22.9		7.6		5.1				
						5.2				
						5.0				
						5.4				
16-Nov-14	25	23.0		7.1		4.8				
		23.0		7.4		4.8				
						5.3				
						5.1				
						5.5				
17-Nov-14	26	22.8		7.5		3.2				
		22.7		7.5		3.6				
						4.0				
						3.6				
						4.0				
18-Nov-14	27	23.4		7.6		4.8				
		23.4		7.4		5.0				
						5.2				
						4.7				
						5.3				
19-Nov-14	28	22.9	8.03	6.9	317.0	4.0	132	104	0.13	J
		22.9	7.99	7.4	317.0	4.0				
						4.0				
						4.0				
						4.2				
Mean		**22.8**	**8.05**	**7.2**	**320.5**	**4.7**	**139.4**	**105.7**	**0.36**	
Number		**58**	**10**	**58**	**10**	**145**	**7**	**6**	**5**	
Max #		**23.4**	**8.34**	**8.4**	**335.0**	**6.2**	**152**	**110**	**0.96**	
Min#		**22.3**	**7.89**	**6.4**	**312.0**	**3.2**	**132**	**98**	**0.12**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1001-AT (15CM)
GLC ID: 10217

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	22.9	8.22	8.3	301.0	6.4	124	104	0.06	J
		22.7	8.26	8.4	300.0	6.0				
						5.8				
						6.6				
						6.4				
23-Oct-14	1	22.8		7.3		5.6				
		22.8		7.2		5.3				
						4.0				
						6.2				
						5.2				
24-Oct-14	2	22.9		7.2		5.4				
		23.0		7.0		4.6				
						5				
						5.2				
						4.6				
25-Oct-14	3	22.6		7.1		3.5				
		22.7		7.1		3.9				
						4.2				
						3.8				
						3.8				
26-Oct-14	4	22.7		6.8		3.7				
		22.8		7.2		3.6				
						3.9				
						3.6				
						4.0				
27-Oct-14	5	22.8		7.2		5.0				
		22.8		7.2		4.6				
						5.0				
						5.0				
						4.6				
28-Oct-14	6	22.7		7.1		5.4				
		22.7		7.0		5.0				
						5.5				
						5.6				
						5.2				
29-Oct-14	7	22.8	7.86	7.1	311.0	4.8	128	108	0.74	
		22.7	7.97	7.2	313.0	4.5				
						5.0				
						5.2				
						4.6				
30-Oct-14	8	22.7		7.5		4.5				
		22.7		7.1		4.2				
						4.6				
						4.7				
						4.2				
31-Oct-14	9	22.7		7.5		3.8				
		22.7		7.2		3.6				
						4.2				
						4.1				
						3.4				
1-Nov-14	10	22.3		6.8		4.2				
		22.4		7.1		4.0				
						4.4				
						4.4				
						4.4				
2-Nov-14	11	22.4		7.7		4.0				
		22.4		7.5		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1001-AT (15CM)
GLC ID: 10217

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.4				
						4.6				
						4.4				
3-Nov-14	12	22.3		7.1		5.9				
		22.3		6.7		5.4				
						6.3				
						5.8				
						6.9				
4-Nov-14	13	22.6		7.0		5.1				
		22.6		6.8		5.2				
						5.5				
						6.0				
						5.2				
5-Nov-14	14	22.7	7.94	8.2	319.0	5.2	160	100	0.51	
		22.6	8.00	8.0	322.0	5.4				
						5.0				
						4.8				
						5.0				
6-Nov-14	15	22.7		6.8		5.6				
		22.5		7.5		5.6				
						6.0				
						5.6				
						5.0				
7-Nov-14	16	22.3		7.7		4.8				
		22.5		7.7		4.4				
						4.8				
						5.2				
						4.8				
8-Nov-14	17	23.0		7.4		5.2				
		23.0		7.4		5.2				
						5.4				
						5.6				
						5.2				
9-Nov-14	18	23.2		6.8		5.2				
		23.1		7.4		4.4				
						5.0				
						5.2				
						4.6				
10-Nov-14	19	23.3		6.9		5.1				
		23.1		7.4		5.1				
						5.8				
						5.4				
						5.2				
11-Nov-14	20	23.0		7.6		4.8				
		23.0		7.1		5.3				
						5.1				
						5.2				
						5.5				
12-Nov-14	21	23.0	7.85	7.2	305.0	6.0	128.0	96	0.21	
		22.8	8.00	7.7	305.0	6.0			0.21	
						6.0				
						6.2				
						5.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1001-AT (15CM)
GLC ID: 10217

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.7		7.2		4.8				
		22.8		7.0		4.5				
						5.0				
						5.0				
						4.7				
14-Nov-14	23	22.8		7.6		5.2				
		22.9		7.8		4.8				
						5.2				
						5.4				
						4.8				
15-Nov-14	24	22.8		7.4		5.5				
		22.7		7.6		5.2				
						5.6				
						5.6				
						5.3				
16-Nov-14	25	22.9		7.2		4.9				
		23.0		7.5		5.4				
						5.6				
						5.5				
						5.1				
17-Nov-14	26	22.7		7.4		4.0				
		22.7		7.2		3.8				
						4.4				
						4.0				
						4.0				
18-Nov-14	27	22.9		7.7		5.4				
		22.9		7.7		5.1				
						5.4				
						5.2				
						5.2				
19-Nov-14	28	22.8	8.04	7.7	309.0	4.2	136	98	0.13	J
		22.9	8.06	7.9	310.0	4.4				
						4.8				
						4.2				
						4.2				
Mean		**22.8**	**8.02**	**7.3**	**309.5**	**5.0**	**135.2**	**101.2**	**0.31**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.3**	**8.26**	**8.4**	**322.0**	**6.9**	**160**	**108**	**0.74**	
Min#		**22.3**	**7.85**	**6.7**	**300.0**	**3.4**	**124**	**96**	**0.06**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1042-AT (15CM)
GLC ID: 10218

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	23.3	8.26	8.3	307.0	4.8	140	92	0.09	J
		23.1	8.27	8.3	308.0	4.6				
						4.6				
						4.4				
						4.2				
23-Oct-14	1	22.7		7.0		4.4				
		22.6		7.0		4.4				
						3.7				
						4.2				
						4.0				
24-Oct-14	2	22.9		7.4		4.4				
		23.1		7.1		4.2				
						4.0				
						3.8				
						3.5				
25-Oct-14	3	22.9		6.9		3.4				
		22.9		7.3		3.3				
						3.5				
						3.2				
						3.6				
26-Oct-14	4	22.8		7.1		4.0				
		22.8		7.0		4.2				
						3.7				
						3.9				
						4.1				
27-Oct-14	5	22.7		7.5		5.4				
		22.8		7.1		5.5				
						5.4				
						5.3				
						5.2				
28-Oct-14	6	22.7		7.8		5.2				
		22.7		7.6		5.3				
						5.2				
						5.0				
						5.1				
29-Oct-14	7	22.6	7.98	7.2	317.0	5.2	124	100	0.86	
		22.8	7.97	7.2	319.0	5.1				
						5.0				
						4.8				
						4.8				
30-Oct-14	8	23.0		7.3		5.2				
		22.9		7.4		4.8				
						5.0				
						4.8				
						4.8				
31-Oct-14	9	22.9		7.5		5.2				
		22.9		7.6		4.8				
						5.2				
						5.1				
						4.8				
1-Nov-14	10	22.4		7.1		4.8				
		22.3		7.4		5.0				
						5.0				
						4.8				
						5.2				
2-Nov-14	11	22.2		7.6		4.6				
		22.2		7.8		4.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1042-AT (15CM)
GLC ID: 10218

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.4				
						4.4				
3-Nov-14	12	22.7		7.2		5.7				
		22.7		7.2		4.9				
						5.8				
						4.6				
						5.1				
4-Nov-14	13	22.5		6.9		5.6				
		22.5		6.9		5.2				
						5.2				
						5.2				
						5.2				
5-Nov-14	14	22.6	7.92	8.1	310.0	5.8	148	104	0.50	
		22.5	7.90	7.7	314.0	6.2			0.51	
						6.2				
						6.4				
						6.2				
6-Nov-14	15	23.1		7.7		6.4				
		23.0		7.6		6.2				
						6.2				
						6.2				
						6.2				
7-Nov-14	16	22.5		8.0		6.6				
		22.7		7.8		6.4				
						6.4				
						6.4				
						6.0				
8-Nov-14	17	23.0		7.6		6.0				
		23.1		7.2		6.0				
						6.0				
						6.2				
						5.6				
9-Nov-14	18	23.1		7.7		6.0				
		23.2		7.6		5.6				
						5.6				
						6.0				
						5.6				
10-Nov-14	19	23.2		7.7		5.8				
		23.2		7.6		5.6				
						4.9				
						5.6				
						5.1				
11-Nov-14	20	22.9		7.4		4.9				
		22.9		7.9		5.4				
						4.6				
						4.9				
						5.3				
12-Nov-14	21	22.9	8.03	7.7	311.0	6.0	132	100	0.14	J
		22.9	8.03	7.7	311.0	5.6				
						6.0				
						6.0				
						6.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1042-AT (15CM)
GLC ID: 10218

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.5		6.8		5.7				
		22.5		7.0		5.4				
						5.2				
						5.5				
						5.0				
14-Nov-14	23	22.6		7.9		5.0				
		22.5		8.1		4.8				
						4.6				
						4.8				
						4.4				
15-Nov-14	24	22.9		7.9		5.4				
		22.8		7.9		5.2				
						4.9				
						5.5				
						4.8				
16-Nov-14	25	23.0		7.8		5.1				
		23.0		7.6		5.4				
						4.9				
						5.2				
						5.0				
17-Nov-14	26	22.4		7.6		4.4				
		22.6		7.4		4.4				
						4.0				
						4.4				
						4.0				
18-Nov-14	27	22.6		7.8		6.0				
		22.7		7.8		5.4				
						5.2				
						5.8				
						5.0				
19-Nov-14	28	22.6	8.03	7.7	313.0	6.0	136	100	0.14	J
		22.7	8.05	7.7	313.0	5.6				
						5.8				
						6.4				
						5.0				
Mean		**22.8**	**8.04**	**7.5**	**312.3**	**5.1**	**136.0**	**99.2**	**0.37**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.3**	**8.27**	**8.3**	**319.0**	**6.6**	**148**	**104**	**0.86**	
Min#		**22.2**	**7.90**	**6.8**	**307.0**	**3.2**	**124**	**92**	**0.09**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1009-AT (15CM)
GLC ID: 10219

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	23.1	8.27	8.4	298.4	4.6	124	112	0.03	J
		23.0	8.24	8.4	298.1	4.6				
						4.0				
						4.0				
						4.0				
23-Oct-14	1	22.6		7.0		4.0				
		22.6		7.2		4.4				
						3.4				
						3.6				
						3.6				
24-Oct-14	2	22.9		7.3		3.6				
		22.9		7.4		4.2				
						3.2				
						3.8				
						3.9				
25-Oct-14	3	22.8		7.3		3.7				
		22.9		7.2		3.8				
						4.0				
						3.5				
						3.6				
26-Oct-14	4	22.9		6.9		3.9				
		22.7		7.0		3.6				
						3.8				
						4.0				
						3.9				
27-Oct-14	5	22.7		7.1		5.4				
		22.7		7.1		6.0				
						4.8				
						4.8				
						5.2				
28-Oct-14	6	22.8		7.4		5.2				
		22.7		7.3		5.6				
						4.4				
						4.6				
						5.0				
29-Oct-14	7	22.8	8.01	7.2	311.0	5.2	132	104	0.70	
		22.8	7.99	7.3	312.0	5.7				
						4.4				
						4.6				
						4.8				
30-Oct-14	8	22.9		6.9		5.1				
		23.0		7.1		5.4				
						4.3				
						4.3				
						4.6				
31-Oct-14	9	22.5		7.5		4.8				
		22.4		7.6		5.4				
						4.0				
						4.0				
						4.2				
1-Nov-14	10	22.3		7.3		5.2				
		22.3		7.2		5.0				
						5.0				
						5.2				
						5.0				
2-Nov-14	11	22.3		7.1		4.0				
		22.2		7.0		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1009-AT (15CM)
GLC ID: 10219

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.2				
						4.0				
						3.8				
3-Nov-14	12	22.6		6.8		5.9				
		22.4		7.1		5.2				
						5.4				
						4.9				
						5.3				
4-Nov-14	13	22.7		7.1		5.4				
		22.8		7.3		5.5				
						4.2				
						4.2				
						4.4				
5-Nov-14	14	22.7	7.90	8.0	318.0	4.4	136	102	0.52	
		22.4	7.94	7.7	312.0	4.6				
						4.8				
						4.6				
						4.4				
6-Nov-14	15	22.9		7.9		6.2				
		22.5		7.5		6.0				
						5.6				
						5.4				
						5.6				
7-Nov-14	16	22.2		8.0		6.2				
		22.2		7.8		6.4				
						6.0				
						5.2				
						5.8				
8-Nov-14	17	22.5		7.3		5.6				
		22.5		7.7		6.2				
						5.2				
						5.2				
						4.6				
9-Nov-14	18	23.1		7.8		6.2				
		23.0		7.5		6.0				
						5.6				
						5.6				
						5.0				
10-Nov-14	19	23.0		7.9		6.2				
		23.0		7.7		6.4				
						6.6				
						6.1				
						5.8				
11-Nov-14	20	23.0		7.5		6.0				
		23.0		7.6		6.5				
						5.8				
						6.3				
						6.1				
12-Nov-14	21	22.8	8.08	7.9	309.0	6.2	132.0	100	0.26	
		22.8	8.02	7.7	308.0	6.2				
						5.6				
						5.6				
						5.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1009-AT (15CM)
GLC ID: 10219

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.4		6.9		5.3				
		22.5		7.2		5.3				
						5.4				
						4.6				
						4.4				
14-Nov-14	23	22.3		8.0		4.6				
		22.3		7.9		4.5				
						4.0				
						4.0				
						3.6				
15-Nov-14	24	22.6		8.0		5.2				
		22.6		8.0		5.0				
						4.4				
						4.3				
						4.1				
16-Nov-14	25	22.9		7.9		4.7				
		22.9		7.6		5.3				
						5.1				
						4.1				
						5.0				
17-Nov-14	26	22.5		7.5		4.6				
		22.5		7.5		4.4				
						3.6				
						3.6				
						3.0				
18-Nov-14	27	22.5		7.9		5.5				
		22.5		7.7		5.6				
						4.9				
						5.0				
						4.2				
19-Nov-14	28	22.6	8.10	7.8	311.0	6.0	136	102	0.13	J
		22.6	8.00	7.6	311.0	5.8			0.16	J
						5.0				
						5.0				
						4.2				
Mean		**22.7**	**8.06**	**7.5**	**308.9**	**4.9**	**132.0**	**104.0**	**0.30**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.1**	**8.27**	**8.4**	**318.0**	**6.6**	**136**	**112**	**0.70**	
Min#		**22.2**	**7.90**	**6.8**	**298.1**	**3.0**	**124**	**100**	**0.03**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1017-AT (15CM)
GLC ID: 10220

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	23.1	8.24	8.4	299.5	5.6	128	100	0.04	J
		23.1	8.25	8.4	299.1	5.6				
						6.6				
						6.6				
						5.8				
23-Oct-14	1	22.5		7.2		4.6				
		22.6		7.2		4.4				
						5.4				
						5.2				
						4.6				
24-Oct-14	2	22.9		7.1		4.0				
		22.9		7.0		4.0				
						4.8				
						4.6				
						4.0				
25-Oct-14	3	23.0		6.6		4.1				
		22.9		6.9		3.8				
						4.3				
						4.2				
						4.7				
26-Oct-14	4	22.9		6.6		4.2				
		22.9		6.7		3.7				
						3.9				
						4.0				
						4.1				
27-Oct-14	5	22.7		7.0		5.0				
		22.7		7.0		5.4				
						6.0				
						5.8				
						5.2				
28-Oct-14	6	22.7		7.4		4.6				
		22.8		7.1		4.6				
						5.5				
						5.2				
						4.6				
29-Oct-14	7	22.7	7.97	7.4	309.0	4.4	124	100	0.71	
		22.8	7.90	7.3	310.0	4.4				
						5.3				
						5.0				
						4.4				
30-Oct-14	8	22.8		6.8		4.4				
		22.9		6.9		4.2				
						5.2				
						4.9				
						4.4				
31-Oct-14	9	22.8		7.1		4.4				
		22.8		7.4		4.0				
						5.0				
						4.8				
						4.2				
1-Nov-14	10	22.3		7.1		5.6				
		22.3		7.0		5.8				
						5.8				
						5.0				
						5.4				
2-Nov-14	11	22.5		6.7		4.0				
		22.3		6.9		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1017-AT (15CM)
GLC ID: 10220

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.8				
						5.2				
3-Nov-14	12	22.6		7.1		4.6				
		22.5		7.1		4.2				
						TE				
						TE				
						TE				
4-Nov-14	13	22.8		6.9		4.2				
		22.9		6.9		4.2				
						4.8				
						4.9				
						4.4				
5-Nov-14	14	22.7	7.91	7.9	318.0	4.0	144	98	0.59	
		22.3	7.87	7.7	311.0	4.2				
						4.0				
						4.0				
						4.0				
6-Nov-14	15	22.8		7.4		4.8				
		22.8		7.5		4.6				
						4.8				
						4.4				
						4.6				
7-Nov-14	16	22.3		7.9		5.2				
		22.5		7.7		4.8				
						5.6				
						5.6				
						4.8				
8-Nov-14	17	22.7		7.4		6.0				
		22.8		7.5		6.0				
						6.8				
						6.6				
						6.0				
9-Nov-14	18	23.2		7.4		5.4				
		23.1		7.5		5.0				
						6.0				
						6.0				
						5.6				
10-Nov-14	19	23.1		7.5		5.6				
		23.0		7.5		5.1				
						4.6				
						4.9				
						5.0				
11-Nov-14	20	23.0		7.1		5.1				
		23.0		7.0		5.3				
						4.9				
						5.5				
						5.6				
12-Nov-14	21	22.9	7.96	7.5	327.0	4.8	132.0	94	0.27	
		22.8	7.98	7.6	320.0	4.8				
						4.0				
						5.2				
						4.8				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1017-AT (15CM)
GLC ID: 10220

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.5		7.1		5.4				
		22.5		7.1		5.0				
						5.0				
						4.9				
						4.7				
14-Nov-14	23	22.7		8.0		5.2				
		22.8		7.8		4.4				
						4.6				
						4.4				
						4.2				
15-Nov-14	24	22.7		7.8		4.3				
		22.9		7.9		4.0				
						3.9				
						4.0				
						3.7				
16-Nov-14	25	23.0		7.5		3.9				
		22.9		7.7		4.2				
						4.1				
						3.8				
						4.0				
17-Nov-14	26	22.6		7.0		6.0				
		22.7		7.1		5.8				
						5.6				
						5.6				
						5.2				
18-Nov-14	27	22.8		7.7		6.2				
		22.8		7.6		5.9				
						6.1				
						6.0				
						5.8				
19-Nov-14	28	22.7	8.03	7.7	310.0	5.2	140	96	0.14	J
		23.0	7.99	7.6	310.0	5.2				
						5.2				
						5.0				
						4.8				
Mean		**22.8**	**8.01**	**7.3**	**311.4**	**4.9**	**133.6**	**97.6**	**0.35**	
Number		**58**	**10**	**58**	**10**	**142**	**5**	**5**	**5**	
Max #		**23.2**	**8.25**	**8.4**	**327.0**	**6.8**	**144**	**100**	**0.71**	
Min#		**22.3**	**7.87**	**6.6**	**299.1**	**3.7**	**124**	**94**	**0.04**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1011-AT (15 CM)
GLC ID: 10221

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
22-Oct-14	0	23.0	8.24	8.4	298.7	6.6	124	104	0.05	J
		22.6	8.24	8.3	302.0	5.0			0.05	J
						6.4				
						5.6				
						5.6				
23-Oct-14	1	22.6		7.4		4.8				
		22.5		7.2		3.8				
						4.8				
						4.2				
						4.3				
24-Oct-14	2	22.8		7.4		4.4				
		22.9		7.4		3.4				
						4.4				
						3.8				
						3.8				
25-Oct-14	3	22.9		6.1		4.0				
		22.9		6.5		4.3				
						3.7				
						3.9				
						4.1				
26-Oct-14	4	22.9		6.8		3.7				
		22.9		6.6		3.8				
						3.5				
						4.0				
						3.8				
27-Oct-14	5	22.7		6.9		5.6				
		22.6		7.0		4.0				
						5.8				
						4.8				
						4.8				
28-Oct-14	6	22.6		7.4		5.2				
		22.6		7.6		3.7				
						5.0				
						4.2				
						4.2				
29-Oct-14	7	22.7	7.91	7.4	312.0	5.0	124	100	0.81	
		22.8	7.88	7.2	314.0	3.6				
						4.8				
						4.0				
						4.0				
30-Oct-14	8	23.0		7.3		4.8				
		23.0		7.0		3.4				
						5.0				
						3.6				
						4.0				
31-Oct-14	9	22.6		7.3		4.8				
		22.5		7.4		3.2				
						4.6				
						4.4				
						4.8				
1-Nov-14	10	22.2		7.0		5.0				
		22.2		6.7		5.0				
						5.2				
						5.2				
						5.0				
2-Nov-14	11	22.3		7.1		5.0				
		22.2		7.5		4.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1011-AT (15 CM)
GLC ID: 10221

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.6				
						4.4				
						4.6				
3-Nov-14	12	22.4		6.4		5.6				
		22.2		7.1		3.8				
						4.1				
						5.1				
						5.3				
4-Nov-14	13	22.7		7.0		4.3				
		22.5		7.2		3.4				
						4.6				
						3.6				
						4.0				
5-Nov-14	14	22.6	7.82	7.8	325.0	4.0	136	100	0.55	
		22.6	7.88	7.6	322.0	4.0				
						4.2				
						4.0				
						4.0				
6-Nov-14	15	22.6		7.3		4.6				
		22.6		7.3		3.8				
						4.4				
						4.2				
						3.4				
7-Nov-14	16	22.1		7.9		5.2				
		22.2		7.5		3.6				
						5.4				
						3.2				
						4.0				
8-Nov-14	17	22.5		7.4		6.2				
		22.7		7.7		4.8				
						6.2				
						4.6				
						4.8				
9-Nov-14	18	23.1		7.2		6.0				
		23.0		7.4		4.4				
						5.4				
						4.8				
						5.2				
10-Nov-14	19	23.1		7.3		5.4				
		23.0		7.4		5.1				
						5.0				
						4.1				
						4.3				
11-Nov-14	20	22.9		7.2		4.9				
		23.0		7.4		5.3				
						5.6				
						4.0				
						4.7				
12-Nov-14	21	22.8	7.99	7.5	309.0	5.2	128.0	100	0.35	
		22.8	7.96	7.4	310.0	5.0				
						4.8				
						4.8				
						4.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1011-AT (15 CM)
GLC ID: 10221

Test Dates: October 22-November 19, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
13-Nov-14	22	22.5		7.0		4.4				
		22.5		7.0		4.4				
						4.2				
						3.9				
						4.0				
14-Nov-14	23	22.5		8.0		4.0				
		22.5		8.0		4.0				
						3.9				
						3.4				
						3.7				
15-Nov-14	24	22.6		7.9		3.6				
		22.7		7.7		3.4				
						3.4				
						3.1				
						3.3				
16-Nov-14	25	22.7		7.6		4.0				
		22.8		7.7		4.0				
						3.4				
						3.7				
						3.1				
17-Nov-14	26	22.7		7.2		4.8				
		22.7		7.2		5.2				
						4.8				
						4.0				
						4.8				
18-Nov-14	27	22.6		7.9		5.4				
		22.7		7.9		5.6				
						5.6				
						5.2				
						5.2				
19-Nov-14	28	22.6	8.01	7.8	314.0	4.8	140	100	0.20	
		22.6	7.98	7.7	315.0	5.2				
						4.8				
						4.8				
						5.0				
Mean		**22.7**	**7.99**	**7.4**	**312.2**	**4.5**	**130.4**	**100.8**	**0.34**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.1**	**8.24**	**8.4**	**325.0**	**6.6**	**140**	**104**	**0.81**	
Min#		**22.1**	**7.82**	**6.1**	**298.7**	**3.1**	**124**	**100**	**0.05**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Appendix B6
Overlying Water Quality Summaries

- 28-Day *Lumbriculus variegatus*
  November 12-December 10, 014

Project Name: Stantec St. Louis River
2290-03

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: *Lumbriculus variegatus*

Date	Initials	Data Entry
12/22/14	ES	all

100% QC

Date	Initials	Data Entry	
12/29/14	MGM	Con,10222,10223	(Errors Highlighted in red)
12/30/14	MGM	10224-10226,10254,10256	(Errors Highlighted in red)

10% QC

Date	Initials	Data QC
01/20/15	MLV	10%

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 125

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.9	8.28	8.4	311	5.6	128	104	0.14	J
		22.9	8.22	8.2	312	4.8				
						5.0				
						4.6				
						4.4				
13-Nov-14	1	22.8		7.20		3.7				
		22.7		6.90		3.8				
						3.7				
						3.5				
						4.2				
14-Nov-14	2	22.6		6.0		4.2				
		22.7		5.7		4.4				
						4.2				
						4.0				
						4.5				
15-Nov-14	3	22.4		6.1		3.4				
		22.5		5.9		3.5				
						3.4				
						3.5				
						3.7				
16-Nov-14	4	22.7		5.4		4.1				
		22.8		5.3		3.6				
						3.3				
						3.7				
						3.9				
17-Nov-14	5	22.6		6.0		4.0				
		22.5		5.9		4.0				
						3.6				
						3.6				
						3.2				
18-Nov-14	6	22.5		6.7		4.0				
		22.7		6.0		4.1				
						4.0				
						4.0				
						4.4				
19-Nov-14	7	22.5	7.75	6.5	333	4.8	136	102	0.16	J
		22.6	7.75	5.9	332	4.8				
						4.6				
						4.6				
						5.0				
20-Nov-14	8	22.7		6.7		3.8				
		22.6		6.6		3.8				
						3.1				
						3.8				
						4.0				
21-Nov-14	9	22.6		6.5		4.9				
		22.6		7.0		5.1				
						4.7				
						4.9				
						5.0				
22-Nov-14	10	22.6		6.3		4.0				
		22.8		6.2		4.0				
						4.0				
						4.0				
						4.4				
23-Nov-14	11	22.6		7.7		4.0				
		22.9		5.8		4.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 125

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.0				
						4.0				
						4.0				
24-Nov-14	12	23.5		5.5		4.4				
		23.6		6.4		4.4				
						3.7				
						4.4				
						4.9				
25-Nov-14	13	22.5		6.2		4.8				
		22.9		6.0		4.7				
						4.5				
						5.0				
						5.1				
26-Nov-14	14	22.8	7.90	7.2	320	5.2	136	112	0.91	
		22.8	7.72	5.9	321	5.2				
						5.1				
						5.5				
						5.6				
27-Nov-14	15	22.9		6.2		4.1				
		22.8		6.6		3.9				
						3.8				
						4.2				
						4.5				
28-Nov-14	16	22.5		7.1		4.2				
		22.7		5.7		3.8				
						3.9				
						4.4				
						4.5				
29-Nov-14	17	22.6		6.4		3.9				
		22.6		7.0		3.9				
						4.2				
						4.4				
						3.7				
30-Nov-14	18	22.9		7.0		4.4				
		22.8		7.3		4.1				
						4.3				
						3.9				
						4.0				
1-Dec-14	19	22.6		7.1		5.2				
		22.7		5.1		4.8				
						4.5				
						5.0				
						4.9				
2-Dec-14	20	22.6		6.7		4.1				
		22.8		6.0		4.0				
						4.0				
						4.4				
						4.5				
3-Dec-14	21	23.1	7.64	5.0	323	4.6	140	106	0.17	J
		23.1	7.86	6.8	321	4.6				
						4.6				
						5.1				
						4.7				

Project Name: Stantec St. Louis River
2290-03
Sample ID: Laboratory Control
GLC ID: CS# 125

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	22.9		7.1		3.9				
		23.0		6.3		4.0				
						4.1				
						4.6				
						5.0				
5-Dec-14	23	23.0		6.6		3.8				
		23.3		5.9		4.0				
						4.5				
						4.4				
						4.4				
6-Dec-14	24	23.0		6.9		3.6				
		23.2		6.5		4.0				
						4.0				
						4.4				
						4.4				
7-Dec-14	25	22.9		6.2		4.0				
		23.0		7.0		4.4				
						3.4				
						4.0				
						4.4				
8-Dec-14	26	23.2		6.8		4.9				
		23.2		5.8		5.0				
						5.0				
						5.1				
						4.0				
9-Dec-14	27	23.2		6.6		4.0				
		23.4		5.7		4.3				
						4.3				
						4.4				
						3.8				
10-Dec-14	28	23.0	7.91	7.1	321	3.2	144	108	0.19	J
		23.0	7.71	5.7	319	4.2				
						4.0				
						4.0				
						3.6				
Mean		**22.8**	**7.87**	**6.4**	**321.3**	**4.3**	**136.8**	**106.4**	**0.31**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**5**	
Max #		**23.6**	**8.28**	**8.4**	**333.0**	**5.6**	**144**	**112**	**0.91**	
Min#		**22.4**	**7.64**	**5.0**	**311.0**	**3.1**	**128**	**102**	**0.14**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1031-AT(15CM)
GLC ID: 10222

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	23.0	8.19	8.3	305	5.0	132	100	0.06	J
		23.0	8.10	8.1	305	5.0				
						5.6				
						5.6				
						5.0				
13-Nov-14	1	22.7		5.7		4.6				
		22.7		5.8		4.1				
						4.4				
						4.5				
						4.4				
14-Nov-14	2	22.8		6.9		5.2				
		22.8		6.7		4.6				
						4.7				
						5.1				
						5.0				
15-Nov-14	3	22.7		6.6		4.4				
		22.7		6.6		4.0				
						4.0				
						4.5				
						4.4				
16-Nov-14	4	22.9		6.5		4.1				
		22.9		6.7		4.5				
						3.8				
						3.6				
						4.0				
17-Nov-14	5	22.4		6.6		4.0				
		22.4		6.7		4.0				
						4.4				
						4.4				
						4.8				
18-Nov-14	6	22.7		7.1		4.7				
						4.2				
						4.4				
						4.8				
						4.8				
19-Nov-14	7	22.7	7.80	7.1	304	5.4	132	96	0.92	
		22.8	7.74	6.6	306	5.0				
						5.0				
						5.6				
						5.6				
20-Nov-14	8	22.7		7.2		4.4				
		22.8		6.9		4.0				
						4.2				
						4.5				
						4.4				
21-Nov-14	9	22.8		7.2		5.4				
		22.8		7.2		4.9				
						5.2				
						5.4				
						5.4				
22-Nov-14	10	22.8		6.4		4.8				
		22.9		6.6		4.0				
						4.4				
						4.8				
						4.8				
23-Nov-14	11	23.0		6.2		4.8				
		23.0		6.9		4.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1031-AT(15CM)
GLC ID: 10222

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.4				
						4.8				
						3.2				
24-Nov-14	12	23.6		6.5		4.9				
		23.6		6.9		4.7				
						4.9				
						5.3				
						5.3				
25-Nov-14	13	22.9		6.9		5.0				
		23.0		6.9		5.0				
						5.1				
						5.2				
						5.3				
26-Nov-14	14	22.9	7.67	6.2	304	5.6	136	96	0.31	
		22.8	7.76	6.8	301	5.4				
						5.6				
						5.9				
						6.0				
27-Nov-14	15	22.8		7.2		4.6				
		22.9		7.3		4.2				
						4.6				
						3.8				
						3.8				
28-Nov-14	16	22.7		6.3		4.5				
		22.7		6.8		4.2				
						4.6				
						4.9				
						4.8				
29-Nov-14	17	22.7		6.9		4.0				
		22.6		6.7		4.4				
						4.1				
						3.9				
						4.3				
30-Nov-14	18	22.9		6.9		4.6				
		22.9		6.5		4.2				
						3.7				
						4.0				
						4.2				
1-Dec-14	19	22.6		6.3		5.0				
		22.5		7.2		4.6				
						5.0				
						5.0				
						5.1				
2-Dec-14	20	22.7		7.0		4.5				
		22.8		7.2		4.1				
						4.6				
						4.6				
						4.7				
3-Dec-14	21	23.1	7.81	7.0	311	5.2	136	98	0.10	J
		23.2	7.90	7.4	311	4.4	136		0.10	
						5.0				
						4.8				
						5.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1031-AT(15CM)
GLC ID: 10222

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	23.1		6.5		4.4				
		23.0		7.2		4.4				
						5.0				
						4.7				
						5.0				
5-Dec-14	23	23.3		7.2		4.9				
		23.4		7.4		4.3				
						4.7				
						4.6				
						4.9				
6-Dec-14	24	23.3		7.2		4.8				
		23.3		7.3		4.4				
						4.8				
						4.4				
						4.8				
7-Dec-14	25	23.0		7.3		5.6				
		23.1		7.5		4.4				
						5.0				
						4.8				
						4.8				
8-Dec-14	26	23.3		6.2		5.6				
		23.3		6.8		4.5				
						5.2				
						4.8				
						5.4				
9-Dec-14	27	23.5		7.0		5.2				
		23.6		7.3		4.0				
						4.4				
						4.3				
						4.9				
10-Dec-14	28	23.1	7.76	6.3	313	4.6	140	102	0.15	J
		23.1	7.83	6.8	311	3.6				
						4.0				
						4.0				
						4.4				
Mean		**22.9**	**7.86**	**6.9**	**307.1**	**4.7**	**135.3**	**98.4**	**0.27**	
Number		**57**	**10**	**57**	**10**	**145**	**6**	**5**	**6**	
Max #		**23.6**	**8.19**	**8.3**	**313.0**	**6.0**	**140**	**102**	**0.92**	
Min#		**22.4**	**7.67**	**5.7**	**301.0**	**3.2**	**132**	**96**	**0.06**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1033-AT(15CM)
GLC ID: 10223

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.9	8.19	8.3	306	4.0	132	98	0.07	J
		22.7	8.26	8.5	305	4.4		100		
						4.6				
						4.6				
						4.8				
13-Nov-14	1	22.7		6.8		3.2				
		22.6		6.6		3.9				
						3.7				
						3.6				
						3.8				
14-Nov-14	2	22.5		7.3		4.4				
		22.6		7.0		5.2				
						5.0				
						5.0				
						5.1				
15-Nov-14	3	22.4		6.7		4.3				
		22.4		6.8		4.0				
						3.8				
						4.0				
						3.9				
16-Nov-14	4	22.5		7.3		4.1				
		22.5		7.5		4.4				
						4.0				
						3.8				
						4.2				
17-Nov-14	5	22.3		6.7		5.0				
		22.4		6.6		5.6				
						6.0				
						6.0				
						6.0				
18-Nov-14	6	22.5		7.1		3.8				
		22.5		6.7		4.1				
						4.2				
						4.0				
						4.0				
19-Nov-14	7	22.5	7.82	7.2	308	6.6	128	100	0.84	
		22.5	7.75	6.7	309	6.0				
						6.0				
						5.8				
						6.6				
20-Nov-14	8	22.6		7.5		4.5				
		22.6		7.4		4.9				
						4.9				
						4.8				
						5.5				
21-Nov-14	9	22.7		7.5		4.8				
		22.6		7.4		5.2				
						5.2				
						5.1				
						5.7				
22-Nov-14	10	22.6		7.0		4.8				
		22.7		6.5		4.8				
						4.8				
						4.8				
						5.6				
23-Nov-14	11	23.0		7.2		4.4				
		22.9		7.1		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1033-AT(15CM)
GLC ID: 10223

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.8				
						5.2				
24-Nov-14	12	23.4		6.7		4.0				
		23.4		6.9		4.4				
						4.4				
						4.2				
						4.6				
25-Nov-14	13	22.9		6.9		3.8				
		22.9		6.0		3.9				
						4.2				
						4.2				
						4.4				
26-Nov-14	14	22.7	7.74	7.0	307	4.3	128	98	1.72	
		22.6	7.88	7.6	311	4.4	132	98	1.63	
						4.5				
						4.5				
						4.8				
27-Nov-14	15	22.5		7.4		4.0				
		22.6		6.7		4.2				
						4.4				
						4.2				
						4.4				
28-Nov-14	16	22.6		6.9		4.9				
		22.5		7.1		4.0				
						4.3				
						4.0				
						3.4				
29-Nov-14	17	22.8		7.4		3.9				
		22.8		7.3		4.2				
						4.5				
						4.1				
						3.7				
30-Nov-14	18	22.8		7.3		4.3				
		22.8		7.3		3.9				
						4.1				
						4.1				
						4.5				
1-Dec-14	19	22.6		7.2		4.8				
		22.4		7.2		4.8				
						5.0				
						5.0				
						4.8				
2-Dec-14	20	22.6		7.4		4.4				
		22.8		6.6		4.5				
						4.3				
						4.2				
						4.6				
3-Dec-14	21	22.8	7.95	7.8	315	3.8	132	98	0.14	J
		22.9	7.93	7.6	313	4.2				
						4.4				
						3.8				
						4.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1033-AT(15CM)
GLC ID: 10223

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	22.8		7.4		4.0				
		22.7		8.0		4.0				
						4.3				
						3.5				
						5.0				
5-Dec-14	23	23.0		7.6		4.0				
		23.2		7.0		3.6				
						4.0				
						4.4				
						4.1				
6-Dec-14	24	23.0		7.9		4.0				
		23.2		7.1		3.2				
						4.0				
						4.4				
						4.0				
7-Dec-14	25	22.7		8.0		4.4				
		22.8		8.0		3.0				
						4.0				
						4.4				
						4.0				
8-Dec-14	26	23.1		7.1		5.5				
		23.0		6.9		4.0				
						5.0				
						5.5				
						5.9				
9-Dec-14	27	23.3		7.4		4.2				
		23.5		6.6		3.9				
						4.9				
						4.4				
						4.0				
10-Dec-14	28	23.0	7.97	7.5	313	4.8	136	100	0.16	J
		22.9	8.07	7.8	314	4.0				
						4.0				
						4.0				
						3.8				
Mean		**22.8**	**7.96**	**7.2**	**310.1**	**4.5**	**131.3**	**98.9**	**0.76**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**7**	**6**	
Max #		**23.5**	**8.26**	**8.5**	**315.0**	**6.6**	**136**	**100**	**1.72**	
Min#		**22.3**	**7.74**	**6.0**	**305.0**	**3.0**	**128**	**98**	**0.07**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1034-AT (15CM)
GLC ID: 10224

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.8	8.19	8.4	308	4.8	136	100	0.50	
		22.9	8.23	8.4	307	5.0	128			
						4.8				
						4.8				
						4.6				
13-Nov-14	1	22.6		6.5		3.9				
		22.7		6.4		4.2				
						3.8				
						3.8				
						3.8				
14-Nov-14	2	22.8		7.3		5.0				
		22.9		6.8		5.5				
						5.0				
						5.0				
						5.1				
15-Nov-14	3	22.6		7.1		4.0				
		22.6		7.2		4.4				
						4.0				
						3.9				
						4.0				
16-Nov-14	4	22.8		6.4		4.2				
		22.8		6.9		4.1				
						3.7				
						4.3				
						3.9				
17-Nov-14	5	22.3		7.4		5.6				
		22.4		7.2		6.4				
						6.0				
						6.0				
						5.8				
18-Nov-14	6	22.8		7.1		4.3				
		22.7		6.8		4.4				
						4.1				
						4.2				
						4.0				
19-Nov-14	7	22.6	7.82	7.1	307	6.6	136	92	1.02	
		22.7	7.75	6.9	307	6.6				
						6.4				
						6.6				
						6.0				
20-Nov-14	8	22.8		7.6		5.3				
		22.8		7.5		5.4				
						5.0				
						5.1				
						5.1				
21-Nov-14	9	22.7		7.1		5.6				
		22.7		7.2		5.8				
						5.5				
						5.4				
						5.4				
22-Nov-14	10	22.8		7.4		5.6				
		22.8		7.0		5.6				
						5.2				
						5.0				
						5.0				
23-Nov-14	11	23.0		7.2		5.2				
		23.0		7.4		5.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1034-AT (15CM)
GLC ID: 10224

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						5.0				
						4.8				
24-Nov-14	12	23.6		7.0		4.8				
		23.6		6.8		4.6				
						4.6				
						4.6				
						4.6				
25-Nov-14	13	23.0		6.8		4.6				
		23.0		6.8		4.3				
						4.4				
						4.2				
						4.3				
26-Nov-14	14	22.8	7.79	7.2	304	5.0	132	94	0.47	
		22.8	7.86	7.4	303	4.6				
						4.8				
						4.8				
						4.7				
27-Nov-14	15	22.8		7.3		4.6				
		22.8		7.2		4.6				
						4.6				
						4.6				
						4.3				
28-Nov-14	16	22.6		7.4		4.7				
		22.5		7.4		4.3				
						4.4				
						4.4				
						4.2				
29-Nov-14	17	22.8		7.0		4.0				
		22.9		7.6		4.1				
						4.3				
						3.6				
						3.8				
30-Nov-14	18	22.7		7.7		3.8				
		22.8		7.3		4.2				
						4.0				
						4.1				
						3.9				
1-Dec-14	19	22.6		7.5		5.6				
		22.4		8.0		5.2				
						5.3				
						5.5				
						5.1				
2-Dec-14	20	22.7		7.3		5.3				
		22.7		7.3		5.0				
						4.8				
						5.5				
						5.3				
3-Dec-14	21	22.9	7.96	7.8	312	4.9	132	100	0.10	J
		23.0	7.91	7.6	312	4.7				
						4.4				
						4.7				
						4.5				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1034-AT (15CM)
GLC ID: 10224

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	22.9		7.7		4.9				
		22.8		7.9		4.6				
						4.4				
						4.6				
						4.4				
5-Dec-14	23	23.3		7.4		4.9				
		23.3		7.5		4.4				
						4.2				
						4.7				
						4.4				
6-Dec-14	24	23.1		7.7		4.8				
		23.3		7.6		4.8				
						4.0				
						4.8				
						4.8				
7-Dec-14	25	22.7		8.2		5.2				
		22.9		8.0		4.4				
						4.0				
						5.0				
						4.4				
8-Dec-14	26	23.1		7.4		6.0				
		23.0		7.5		5.6				
						5.2				
						5.8				
						6.0				
9-Dec-14	27	23.6		7.4		4.8				
		23.6		7.3		4.7				
						4.1				
						4.7				
						4.9				
10-Dec-14	28	23.1	8.01	7.7	309	4.8	140	98	0.14	J
		23.1	8.07	7.9	309	4.8	136	100	0.13	J
						3.8				
						4.8				
						4.8				
Mean		**22.9**	**7.96**	**7.3**	**307.8**	**4.8**	**134.3**	**97.3**	**0.39**	
Number		**58**	**10**	**58**	**10**	**145**	**7**	**6**	**6**	
Max #		**23.6**	**8.23**	**8.4**	**312.0**	**6.6**	**140**	**100**	**1.02**	
Min#		**22.3**	**7.75**	**6.4**	**303.0**	**3.6**	**128**	**92**	**0.10**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1002-AT (15CM)
GLC ID: 10225

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.8	8.16	8.3	302	4.6	140	100	0.12	J
		22.8	8.22	8.4	301	5.0				
						5.0				
						4.8				
						4.6				
13-Nov-14	1	22.6		6.9		4.4				
		22.6		6.9		4.4				
						5.0				
						5.0				
						4.4				
14-Nov-14	2	22.6		7.0		4.9				
		22.7		5.5		4.8				
						5.5				
						5.6				
						4.9				
15-Nov-14	3	22.4		6.7		4.0				
		22.3		6.9		4.3				
						4.6				
						4.6				
						4.2				
16-Nov-14	4	22.7		5.2		3.8				
		22.7		6.2		3.9				
						4.2				
						4.3				
						4.5				
17-Nov-14	5	22.5		6.7		4.8				
		22.4		6.4		4.4				
						5.2				
						5.2				
						4.8				
18-Nov-14	6	22.5		6.9		4.4				
		22.7		5.2		4.4				
						4.8				
						4.7				
						4.4				
19-Nov-14	7	22.5	7.74	6.8	301	4.6	136	100	0.93	
		22.7	7.55	6.6	307	4.6	132	98	0.91	
						5.0				
						5.0				
						4.8				
20-Nov-14	8	22.4		7.3		5.4				
		22.6		7.0		5.6				
						5.9				
						6.0				
						5.5				
21-Nov-14	9	22.7		6.9		5.0				
		22.6		7.1		5.4				
						5.8				
						5.6				
						5.0				
22-Nov-14	10	22.6		7.0		4.8				
		22.7		6.9		4.8				
						5.6				
						5.6				
						4.8				
23-Nov-14	11	22.7		6.8		5.0				
		22.7		7.0		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1002-AT (15CM)
GLC ID: 10225

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						5.6				
						5.6				
						4.8				
24-Nov-14	12	23.4		6.4		4.6				
		23.4		6.8		4.6				
						5.3				
						5.2				
						4.8				
25-Nov-14	13	22.9		7.0		5.3				
		22.8		6.8		5.2				
						5.9				
						5.8				
						5.3				
26-Nov-14	14	22.8	7.65	6.7	300	4.5	124	92	0.31	
		22.8	7.75	7.0	300	4.6				
						5.4				
						5.1				
						4.7				
27-Nov-14	15	22.7		7.4		4.5				
		22.6		7.3		4.5				
						5.2				
						4.9				
						4.4				
28-Nov-14	16	22.5		6.9		4.6				
		22.5		7.0		4.4				
						5.3				
						4.8				
						4.4				
29-Nov-14	17	22.6		7.4		4.3				
		22.6		6.7		4.7				
						5.4				
						4.8				
						5.0				
30-Nov-14	18	22.7		7.3		4.8				
		22.6		7.4		4.7				
						4.2				
						3.9				
						4.1				
1-Dec-14	19	22.5		7.4		4.3				
		22.4		7.6		4.4				
						5.0				
						4.5				
						4.0				
2-Dec-14	20	22.7		7.3		5.4				
		22.7		7.3		5.7				
						6.2				
						5.6				
						4.8				
3-Dec-14	21	23.0	7.89	7.4	308	4.2	132	96	0.09	J
		23.0	7.89	7.5	310	4.6				
						5.2				
						4.4				
						4.0				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1002-AT (15CM)
GLC ID: 10225

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	23.0		7.2		4.2				
		22.9		7.6		4.4				
						5.2				
						4.4				
						4.0				
5-Dec-14	23	23.0		7.4		4.8				
		23.1		7.5		4.9				
						5.6				
						4.8				
						4.4				
6-Dec-14	24	23.0		7.6		4.8				
		23.1		7.5		4.8				
						5.2				
						4.8				
						4.4				
7-Dec-14	25	22.5		8.1		4.8				
		22.6		8.0		4.4				
						5.6				
						4.8				
						4.4				
8-Dec-14	26	23.2		7.2		5.0				
		23.1		7.4		5.6				
						5.9				
						4.4				
						4.8				
9-Dec-14	27	23.3		7.2		4.4				
		23.4		7.2		5.0				
						5.4				
						4.5				
						3.7				
10-Dec-14	28	23.1	7.95	7.4	308	3.8	140	98	0.17	J
		23.0	8.04	7.7	308	4.6				
						4.8				
						4.0				
						4.0				
Mean		**22.8**	**7.88**	**7.1**	**304.5**	**4.8**	**134.0**	**97.3**	**0.42**	
Number		**58**	**10**	**58**	**10**	**145**	**6**	**6**	**6**	
Max #		**23.4**	**8.22**	**8.4**	**310.0**	**6.2**	**140**	**100**	**0.93**	
Min#		**22.3**	**7.55**	**5.2**	**299.6**	**3.7**	**124**	**92**	**0.09**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1005-AT (15CM)
GLC ID: 10226

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.9	8.28	8.4	305	4.6	124	100	0.04	J
		22.9	8.29	8.4	305	4.6				
						4.2				
						4.2				
						3.6				
13-Nov-14	1	22.7		6.8		4.4				
		22.5		6.9		4.4				
						4.2				
						3.8				
						3.4				
14-Nov-14	2	22.7		7.4		5.0				
		22.6		7.2		5.1				
						4.9				
						4.6				
						4.0				
15-Nov-14	3	22.6		7.2		4.2				
		22.6		7.3		4.0				
						3.6				
						3.8				
						3.8				
16-Nov-14	4	22.7		6.4		4.4				
		22.7		6.8		4.4				
						3.6				
						4.0				
						4.1				
17-Nov-14	5	22.4		6.7		4.6				
		22.4		6.6		4.4				
						4.4				
						4.0				
						3.3				
18-Nov-14	6	22.7		7.5		4.6				
		22.7		7.2		4.2				
						4.3				
						3.9				
						3.2				
19-Nov-14	7	22.6	7.95	7.4	310	4.6	136	100	0.79	
		22.6	7.87	7.2	311	4.0				
						4.0				
						3.8				
						3.2				
20-Nov-14	8	22.7		7.7		5.7				
		22.7		7.7		5.6				
						5.4				
						5.0				
						4.2				
21-Nov-14	9	22.7		7.5		5.4				
		22.8		7.3		5.3				
						5.0				
						4.7				
						4.0				
22-Nov-14	10	22.5		7.6		5.2				
		22.7		7.4		5.2				
						5.0				
						4.8				
						4.0				
23-Nov-14	11	22.9		7.5		5.2				
		22.9		7.9		5.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1005-AT (15CM)
GLC ID: 10226

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.8				
						4.0				
24-Nov-14	12	23.5		7.3		5.0				
		23.5		7.3		4.8				
						4.0				
						4.2				
						3.5				
25-Nov-14	13	22.7		7.2		5.0				
		22.6		7.3		5.6				
						4.8				
						5.0				
						4.6				
26-Nov-14	14	22.9	7.88	7.4	308	4.4	136	100	0.50	
		22.9	7.96	7.7	307	4.7				
						4.0				
						4.4				
						3.8				
27-Nov-14	15	22.6		7.6		4.3				
		22.5		7.6		4.6				
						3.9				
						4.0				
						3.7				
28-Nov-14	16	22.5		7.4		4.2				
		22.6		7.6		4.6				
						3.9				
						4.0				
						3.8				
29-Nov-14	17	22.9		7.4		5.1				
		23.0		7.1		3.9				
						4.2				
						4.4				
						3.9				
30-Nov-14	18	23.0		7.6		4.9				
		23.0		7.4		5.2				
						4.8				
						4.8				
						5.0				
1-Dec-14	19	22.8		7.6		3.9				
		22.7		7.9		4.5				
						3.6				
						3.9				
						3.2				
2-Dec-14	20	22.7		7.5		4.9				
		22.6		7.3		5.2				
						4.4				
						4.3				
						4.0				
3-Dec-14	21	23.0	8.00	7.9	314	4.0	140	102	0.08	J
		23.0	7.99	7.8	314	4.6				
						3.8				
						3.7				
						3.3				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1005-AT (15CM)
GLC ID: 10226

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	23.0		7.6		4.0				
		23.0		7.9		4.5				
						3.7				
						3.6				
						3.2				
5-Dec-14	23	23.0		7.7		4.5				
		22.9		7.6		5.0				
						4.1				
						4.0				
						3.7				
6-Dec-14	24	23.0		7.8		4.4				
		23.0		7.7		5.2				
						4.4				
						4.4				
						4.0				
7-Dec-14	25	23.0		8.3		4.8				
		23.0		8.2		5.2				
						4.8				
						4.4				
						3.6				
8-Dec-14	26	23.3		7.4		5.3				
		23.2		7.6		5.8				
						5.2				
						5.0				
						4.0				
9-Dec-14	27	23.4		7.5		4.6				
		23.3		7.6		5.0				
						4.5				
						4.2				
						3.2				
10-Dec-14	28	23.2	8.05	7.7	311	4.0	148	104	0.14	J
		23.1	8.13	7.9	310	4.0				
						3.8				
						4.2				
						4.0				
Mean		**22.8**	**8.04**	**7.5**	**309.5**	**4.4**	**136.8**	**101.2**	**0.31**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**5**	
Max #		**23.5**	**8.29**	**8.4**	**314.0**	**5.8**	**148**	**104**	**0.79**	
Min#		**22.4**	**7.87**	**6.4**	**305.0**	**3.2**	**124**	**100**	**0.04**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1041-AT (15CM)
GLC ID: 10254

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	22.9	8.34	8.5	305	5.0	136	100	0.08	J
		22.9	8.33	8.5	308	5.0			0.08	J
						5.0				
						5.0				
						4.6				
13-Nov-14	1	22.7		6.8		4.0				
		22.7		6.9		3.8				
						4.2				
						3.8				
						3.7				
14-Nov-14	2	22.7		6.9		4.8				
		22.7		6.7		4.7				
						5.0				
						4.8				
						4.5				
15-Nov-14	3	22.6		7.7		4.3				
		22.6		7.7		4.2				
						4.2				
						3.8				
						3.6				
16-Nov-14	4	22.6		6.7		3.9				
		22.7		6.2		4.1				
						3.7				
						4.5				
						4.2				
17-Nov-14	5	22.6		7.3		3.6				
		22.5		7.3		3.6				
						4.0				
						3.2				
						3.2				
18-Nov-14	6	22.7		7.3		5.4				
		22.7		6.9		5.4				
						5.4				
						5.0				
						5.0				
19-Nov-14	7	22.6	7.92	7.3	315	5.4	140	104	0.63	
		22.7	7.88	6.7	315	5.4				
						5.8				
						5.6				
						5.4				
20-Nov-14	8	22.5		7.7		5.0				
		22.7		7.5		5.0				
						5.3				
						5.0				
						4.6				
21-Nov-14	9	22.7		7.9		4.9				
		22.6		7.7		5.0				
						5.2				
						4.7				
						4.6				
22-Nov-14	10	22.7		7.6		5.2				
		22.7		7.7		5.2				
						5.2				
						4.8				
						4.8				
23-Nov-14	11	22.9		8.2		5.0				
		22.9		8.0		4.8				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1041-AT (15CM)
GLC ID: 10254

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						5.2				
						4.8				
						4.6				
24-Nov-14	12	23.5		7.2		4.9				
		23.5		6.9		4.9				
						5.0				
						4.6				
						4.6				
25-Nov-14	13	22.9		7.1		5.8				
		22.8		7.7		5.6				
						5.8				
						5.4				
						5.2				
26-Nov-14	14	22.9	8.05	7.9	311.0	5.2	136	106	0.52	
		22.9	7.99	7.7	312.0	4.9				
						5.5				
						5.1				
						5.0				
27-Nov-14	15	22.6		7.7		5.0				
		22.6		7.5		4.8				
						5.2				
						4.9				
						4.8				
28-Nov-14	16	22.7		7.9		5.5				
		22.7		7.7		5.1				
						5.7				
						5.4				
						5.2				
29-Nov-14	17	22.9		7.0		4.9				
		22.9		7.1		3.9				
						3.8				
						4.4				
						5.1				
30-Nov-14	18	23.0		6.9		4.9				
		23.0		7.4		5.0				
						3.7				
						3.9				
						4.5				
1-Dec-14	19	22.7		7.9		4.8				
		22.7		7.5		4.8				
						5.3				
						4.9				
						4.4				
2-Dec-14	20	22.7		7.3		4.4				
		22.6		7.9		4.2				
						4.7				
						4.5				
						4.0				
3-Dec-14	21	23.2	7.93	7.5	317.0	3.8	132.0	104	0.08	J
		23.1	7.96	7.5	316.0	3.8				
						4.4				
						4.2				
						3.6				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1041-AT (15CM)
GLC ID: 10254

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	23.1		7.9		5.2				
		23.1		7.5		5.8				
						6.2				
						5.9				
						5.4				
5-Dec-14	23	23.1		7.3		5.2				
		23.0		8.0		5.6				
						6.2				
						5.9				
						5.4				
6-Dec-14	24	23.2		7.6		4.8				
		23.1		7.9		5.6				
						6.0				
						5.6				
						5.2				
7-Dec-14	25	22.9		8.1		5.2				
		23.0		7.9		5.6				
						6.4				
						6.0				
						5.6				
8-Dec-14	26	23.4		7.6		4.4				
		23.4		7.1		4.8				
						5.3				
						4.8				
						4.5				
9-Dec-14	27	23.5		7.6		4.0				
		23.5		7.8		4.8				
						5.2				
						5.0				
						5.2				
10-Dec-14	28	23.1	8.11	7.8	314	3.4	136	106	0.14	J
		23.2	8.00	7.4	312	4.2				
						4.6				
						4.6				
						4.8				
Mean		**22.9**	**8.05**	**7.5**	**312.5**	**4.8**	**136.0**	**104.0**	**0.26**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**6**	
Max #		**23.5**	**8.34**	**8.5**	**317.0**	**6.4**	**140**	**106**	**0.63**	
Min#		**22.5**	**7.88**	**6.2**	**305.0**	**3.2**	**132**	**100**	**0.08**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1012-AT (15 CM)
GLC ID: 10256

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
12-Nov-14	0	23.0	7.96	8.1	297	4.6	124	96	0.25	
		22.9	7.99	8.2	295	4.8				
						4.8				
						4.6				
						4.8				
13-Nov-14	1	22.6		6.7		4.0				
		22.5		6.9		3.8				
						3.6				
						3.2				
						3.5				
14-Nov-14	2	22.6		7.6		5.0				
		22.7		7.6		4.5				
						4.5				
						4.0				
						4.4				
15-Nov-14	3	22.5		4.7		4.0				
		22.5		4.9		3.8				
						3.7				
						3.2				
						3.4				
16-Nov-14	4	22.6		5.1		3.6				
		22.6		4.8		3.9				
						4.2				
						4.0				
						3.5				
17-Nov-14	5	22.3		6.0		3.6				
		22.4		5.8		3.0				
						3.2				
						5.2				
						6.0				
18-Nov-14	6	22.6		7.3		5.7				
		22.7		7.2		5.0				
						4.9				
						4.8				
						5.2				
19-Nov-14	7	22.6	7.84	7.2	300	5.4	140	96	0.80	
		22.7	7.85	7.2	301	5.0				
						5.0				
						4.6				
						4.6				
20-Nov-14	8	22.6		7.7		5.2				
		22.7		7.7		4.7				
						4.6				
						4.0				
						3.6				
21-Nov-14	9	22.7		6.4		5.2				
		22.5		6.8		4.5				
						4.4				
						4.5				
						4.6				
22-Nov-14	10	22.8		7.7		5.2				
		22.8		7.2		4.4				
						4.4				
						4.8				
						4.8				
23-Nov-14	11	22.9		5.9		5.2				
		22.9		6.4		4.4				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1012-AT (15 CM)
GLC ID: 10256

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
						4.8				
						4.4				
						4.6				
24-Nov-14	12	23.4		5.7		5.0				
		23.4		6.7		4.6				
						4.5				
						4.4				
						4.6				
25-Nov-14	13	22.8		7.3		5.7				
		22.7		7.0		5.4				
						5.2				
						5.1				
						5.4				
26-Nov-14	14	22.8	7.59	5.4	307.00	5.4	136	100	0.65	
		22.8	7.66	6.5	306.00	5.0				
						4.8				
						4.6				
						4.9				
27-Nov-14	15	22.7		7.5		5.2				
		22.8		7.2		4.9				
						4.6				
						4.4				
						4.9				
28-Nov-14	16	22.7		5.5		5.6				
		22.6		6.0		4.9				
						4.5				
						4.2				
						4.3				
29-Nov-14	17	22.6		7.8		5.8				
		22.7		7.6		5.5				
						5.1				
						5.4				
						5.6				
30-Nov-14	18	22.9		7.5		5.6				
		23.0		7.0		5.1				
						5.4				
						4.9				
						5.2				
1-Dec-14	19	22.7		6.3		5.0				
		22.6		6.2		4.8				
						4.4				
						4.3				
						4.4				
2-Dec-14	20	22.7		7.8		4.6				
		22.7		7.3		4.3				
						3.7				
						3.8				
						3.8				
3-Dec-14	21	23.0	7.71	6.1	313	4.2	132	104	0.32	
		22.9	7.96	7.7	314	3.8				
						3.1				
						3.3				
						3.2				

Project Name: Stantec St. Louis River
2290-03
Sample ID: SS 1012-AT (15 CM)
GLC ID: 10256

Test Dates: November 12-December 10, 2014
Test Type: 28 Day Survival Test
Test Species: Lumbriculus variegatus

Date	Test Day	Temperature (°C)	pH (s.u.)	D.O. (mg/L)	Conductivity (mmos)	Flows (ml/min)	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Ammonia Result Code
4-Dec-14	22	23.1		7.6		6.2				
		22.9		6.4		5.5				
						4.6				
						5.1				
						4.9				
5-Dec-14	23	22.9		8.0		6.2				
		22.9		7.5		5.5				
						4.4				
						5.1				
						4.6				
6-Dec-14	24	23.0		7.8		6.0				
		23.0		7.5		5.6				
						4.4				
						5.2				
						4.4				
7-Dec-14	25	22.9		7.4		6.4				
		22.9		7.6		6.0				
						4.4				
						5.2				
						4.0				
8-Dec-14	26	23.3		7.4		5.0				
		23.2		6.3		4.8				
						3.6				
						4.4				
						3.1				
9-Dec-14	27	23.3		7.6		5.2				
		23.4		7.5		4.8				
						3.8				
						4.6				
						4.2				
10-Dec-14	28	23.3	8.04	7.8	302	4.8	136	100	0.20	
		23.2	7.85	7.0	310	4.6				
						3.8				
						4.0				
						4.0				
Mean		**22.8**	**7.85**	**6.9**	**304.6**	**4.6**	**133.6**	**99.2**	**0.44**	
Number		**58**	**10**	**58**	**10**	**145**	**5**	**5**	**5**	
Max #		**23.4**	**8.04**	**8.2**	**314.0**	**6.4**	**140**	**104**	**0.80**	
Min#		**22.3**	**7.59**	**4.7**	**295.4**	**3.0**	**124**	**96**	**0.20**	

Ammonia Key:
MDL = 0.02
RL = Reporting Limit (lowest standard, 0.2)
J = Between MDL and RL
U = Below MDL (non detect)
NA = Not Applicable

Appendix C1
Chironomus dilutus
10-Day Bench Sheets

- Survival
- Weight

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	124	Test Photoperiod:	16:8
Sample ID:	Laboratory Control	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 550 chemistries time/Initial

Number Daily Renewals: Ø 1 1/19/15 MLV
~~1405~~ renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MLV
1					144	108	0.81	Larvae: Pupae: Midge: 10/10
2					end: 3.8	end: 6.6		Larvae: Pupae: Midge: 10/10
3					start: 0.2	start: 1.2		Larvae: Pupae: Midge: 10/10
4					Titrant used (mL): 3.6	Titrant used (mL): 5.4		Larvae: Pupae: Midge: 10/10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10/10
6								Larvae: Pupae: Midge: 10/10
7	22.2	7.45	3.4	334				Larvae: Pupae: Midge: 10/10
8	22.3	7.52	3.8	331				Larvae: Pupae: Midge: 10/10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit ~~(0.10~~ mg/L). 0.20 DS V26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10207	Test Photoperiod:	16:8
Sample ID:	SS 1022-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day:	Day 10	Number Daily Renewals:	~~Ø~~ 1 1/19/15 MLV
Date:	11/14/2014	~~☐~~ 740K renewal time/Initials	~~☐ renewal~~
Overlying Water:	Dechlor	~~☐ renewal time/Initials~~	~~☐ renewal~~
Overlying Water Batch ID (GLC Number):	NA	Food: ~~TFS# (4g/L)~~	~~☐ Feed 1.5 ml/replicate~~
☒ DS 550 chemistries time/Initial		Screens Cleaned:	☐ yes ☐ no ☒ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					152	100	0.13 J	Larvae: Pupae: Midge: 7 /10
2					end: 11.0	end: 16.9		Larvae: Pupae: Midge: 9 /10
3					start: 7.2	start: 11.9		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.8	Titrant used (mL): 5.0		Larvae: Pupae: Midge: 6 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.6	7.50	5.5	321				Larvae: Pupae: Midge: 7 /10
8	22.6	7.59	5.6	315				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10 mg~~/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Page 7 of 7
QC'd by: MLV

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10208	Test Photoperiod:	16:8
Sample ID:	SS 1024-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~0805~~ 550 chemistries time/Initial

Number Daily Renewals: ~~0~~ 1 11/9/15 MLV
~~□ 740 hrs~~ renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~TFS# (4g/L)~~ ~~□ Feed 1.5 ml/replicate~~
Screens Cleaned: □ yes ~~□~~ no ☑ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	163	175	113	N/A	168	4	Init: MW
1					148	102	0.14 J	Larvae: Pupae: Midge: 9 /10
2					end: 14.7	end: 22.0	Dup=0.14 J	Larvae: Pupae: Midge: 9 /10
3					start: 11.0	start: 16.9		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.7	Titrant used (mL): 5.1		Larvae: Pupae: Midge: 7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6					Dup=140 e: 18.2	Dup=100 e: 27.0		Larvae: Pupae: Midge: 9 /10
7	22.4	7.48	4.7	312	s: 14.7 used: 3.5	s: 22.0 used: 5.0		Larvae: Pupae: Midge: 8 /10
8	22.4	7.52	5.4	319	vol: 25	vol: 50		Larvae: Pupae: Midge: 9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Page 7 of 7
QC'd by: MLV

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10209	Test Photoperiod:	16:8
Sample ID:	SS 1032-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~Ø~~ 03 550 chemistries time/Initial

1/19/15 MLV
Number Daily Renewals: ~~0~~ 1
~~□~~ MOLS renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~TFS# (4g/L)~~ ~~□ Feed 1.5 ml/replicate~~
Screens Cleaned: □ yes □ no ☑ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MLV
1					136	98	0.13 J	Larvae: Pupae: Midge: 9 /10
2					end: 21.6	end: 31.9		Larvae: Pupae: Midge: 10 /10
3					start: 18.7	start: 27.0		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.3	7.51	5.4	308				Larvae: Pupae: Midge: 9 /10
8	22.4	7.57	5.5	309				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L) 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10210	Test Photoperiod:	16:8
Sample ID:	SS 1021-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 550 chemistries time/Initial

Number Daily Renewals: ~~X 0 1/19/15 MLV~~ 1/19/15 MLV
~~0~~ 7 45 renewal time/Initials ~~0~~ ~~renewal~~
~~0 renewal time/Initials~~ ~~0~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~0 Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	117	168	175	113	N/A	168	4	Init: MLV
1					140	102	0.14 J	Larvae: Pupae: Midge: 9 /10
2					end: 25.1	end: 37.0		Larvae: Pupae: Midge: 8 /10
3					start: 21.6	start: 31.9		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.1		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 8 /10
6								Larvae: Pupae: Midge: 9 /10
7	22.3	7.56	5.5	319				Larvae: Pupae: Midge: 10 /10
8	22.4	7.58	5.4	317				Larvae: Pupae: Midge: 8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit ~~(0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLW

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10212	Test Photoperiod:	16:8
Sample ID:	SS 1026-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ DS 550 chemistries time/Initial

Number Daily Renewals: 1
☒ 740 KS renewal time/Initials ☐ ~~renewal~~
☐ ~~renewal time/Initials~~ ☐ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ☐ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					140	100	0.17 J	Larvae: Pupae: Midge: 10 /10
2					end: 28.6	end: 42.0		Larvae: Pupae: Midge: 9 /10
3					start: 25.1	start: 37.0		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.0		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.4	7.49	4.4	315				Larvae: Pupae: Midge: 10 /10
8	22.4	7.57	4.8	313				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10213	Test Photoperiod:	16:8
Sample ID:	SS 1028-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10

Date: 11/14/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

~~1205~~ 550 chemistries time/Initial

Number Daily Renewals: 1

~~1740~~ KS renewal time/Initials ~~☐ renewal~~

~~☐ renewal time/Initials ☐ renewal~~

Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~

Screens Cleaned: ☐ yes ☐ no ☑ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					136	108	0.21	Larvae: Pupae: Midge: 10 /10
2					end: 32.0	end: 5.4	DUP= 0.22	Larvae: Pupae: Midge: 10 /10
3					start: 28.6	start: 0.0		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.4		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6					DUP= 136 e: 35.4	DUP= 106 e: 10.7		Larvae: Pupae: Midge: 8 /10
7	22.4	7.66	5.4	324	s: 32.0 used: 3.4	s: 5.4 used: 5.3		Larvae: Pupae: Midge: 10 /10
8	22.5	7.71	5.3	318	vol: 25	vol: 50		Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10214	Test Photoperiod:	16:8
Sample ID:	SS 1025-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day:	Day 10	Number Daily Renewals:	
Date:	11/14/2014	~~0740~~ KS renewal time/Initials	~~renewal~~
Overlying Water:	Dechlor	~~renewal time/Initials~~	~~renewal~~
Overlying Water Batch ID (GLC Number):	NA	Food: ~~TFS# (4g/L)~~	~~Feed 1.5 ml/replicate~~
~~0805~~ 550 chemistries time/Initial		Screens Cleaned: ☐ yes ☐ no ☐ n/a	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	112	N/A	168	4	Init: MW
1	22.3	7.50	5.4	310	140	98	0.15 J	Larvae: Pupae: Midge: 10 /10
2	22.3	7.54	5.8	310	end: 38.9	end: 15.6		Larvae: Pupae: Midge: 10 /10
3					start: 35.4	start: 10.7		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 8 /10
7								Larvae: Pupae: Midge: 9 /10
8								Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10215	Test Photoperiod:	16:8
Sample ID:	SS 1010-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10

Date: 11/14/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

DS 550 chemistries time/Initial

Number Daily Renewals: 1

~~740 KS~~ renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~

Screens Cleaned: ☐ yes ☐ no ☑ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MLV
1					136	102	0.13 J	Larvae: Pupae: Midge: 8 /10
2					end: 42.3	end: 26.7		Larvae: Pupae: Midge: 8 /10
3					start: 38.9	start: 15.6		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.1		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 8 /10
7	22.4	7.50	4.8	312				Larvae: Pupae: Midge: 8 /10
8	22.4	7.49	4.8	312				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10216	Test Photoperiod:	16:8
Sample ID:	SS 1029-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~DS~~ 550 chemistries time/Initial

Number Daily Renewals: \
~~0740 KS~~ renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~TFS# (4g/L)~~ ~~□ Feed 1.5 ml/replicate~~
Screens Cleaned: □ yes ~~ø~~ no ü n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MLW
1					148	108	0.38	Larvae: Pupae: Midge: 10 /10
2					end: 46.0	end: 26.1		Larvae: Pupae: Midge: 9 /10
3					start: 42.3	start: 20.7		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.7	Titrant used (mL): 5.4		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.5	7.63	~~7.61~~ 4.1	329				Larvae: Pupae: Midge: 10 /10
8	22.6	7.69	DS 11/14/14 ~~7.69~~ 4.2	332				Larvae: Pupae: Midge: 9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10217	Test Photoperiod:	16:8
Sample ID:	SS 1001-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~BDS 555~~ chemistries time/Initial

Number Daily Renewals: 1
~~X~~740 KS renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	~~13 15 DS 11/13/14~~	168	175	113	N/A	168	4	Init: Aur
1					144	100	0.16 J	Larvae: Pupae: Midge: 8 /10
2					end: 3.7	end: 31.1		Larvae: Pupae: Midge: 5 /10
3					start: 0.1	start: 26.1		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.6	Titrant used (mL): 5.0		Larvae: Pupae: Midge: 7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 7 /10
7	22.8	7.48	4.8	314				Larvae: Pupae: Midge: 8 /10
8	22.9	7.56	5.3	313				Larvae: Pupae: Midge: 7 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

Page 4 of 7
QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10218	Test Photoperiod:	16:8
Sample ID:	SS 1042-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day:	Day 10	Number Daily Renewals:	1
Date:	11/14/2014	~~0740 KS~~ renewal time/Initials	~~renewal~~
Overlying Water:	Dechlor	~~renewal time/Initials~~	~~renewal~~
Overlying Water Batch ID (GLC Number):	NA	Food: ~~TFS# (4g/L)~~	~~Feed 1.5 ml/replicate~~
DDS 550 chemistries time/Initial		Screens Cleaned:	☐ yes ☐ no ☒ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MLV
1					160	122	0.73	Larvae: Pupae: Midge: 8 /10
2					end: 7.7	end: 37.4		Larvae: Pupae: Midge: 10 /10
3					start: 3.7	start: 31.3		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 4.0	Titrant used (mL): 6.1		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.8	7.99	4.0	350				Larvae: Pupae: Midge: 10 /10
8	23.1	7.93	4.0	345				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.200 S 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10219	Test Photoperiod:	16:8
Sample ID:	SS 1009-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DO 550 chemistries time/Initial

Number Daily Renewals: 1
X740 KS renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: yes no n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MWC
1					136	98	0.17 J	Larvae: Pupae: Midge: 7 /10
2					end: 11.1	end: 42.3		Larvae: Pupae: Midge: 9 /10
3					start: 7.7	start: 37.4		Larvae: Pupae: Midge: 6 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 7 /10
7	22.8	7.49	4.5	311				Larvae: Pupae: Midge: 10 /10
8	22.8	7.52	5.0	311				Larvae: Pupae: Midge: 15 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10220	Test Photoperiod:	16:8
Sample ID:	SS 1017-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10

Date: 11/14/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

DS 550 chemistries time/Initial

Number Daily Renewals: 1

1740 KS renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~

Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					128	98	0.16 J	Larvae: Pupae: Midge: 10 /10
2					end: 14.3	end: 47.2		Larvae: Pupae: Midge: 10 /10
3					start: 11.1	start: 42.3		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.2	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 9 /10
7	22.8	7.48	4.8	312				Larvae: Pupae: Midge: 10 /10
8	22.8	7.46	4.3	309				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLW

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10221	Test Photoperiod:	16:8
Sample ID:	SS 1011-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ DS 550 chemistries time/Initial

Number Daily Renewals: 1
~~1740 KS~~ renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					140	98	0.14 J	Larvae: Pupae: Midge: 10 /10
2					end: 17.8	end: 6.1		Larvae: Pupae: Midge: 6 /10
3					start: 14.3	start: 1.2		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 9 /10
7	23.0	7.51	4.7	313				Larvae: Pupae: Midge: 8 /10
8	22.4	7.59	5.0	312				Larvae: Pupae: Midge: 9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Page 7 of 7
QC'd by: MLV

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10222	Test Photoperiod:	16:8
Sample ID:	SS 1031-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~4 DS 550~~ chemistries time/Initial

Number Daily Renewals: 1
~~1740 KS~~ renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☐ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH DS WHM	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	~~125~~ 68	175	113	N/A	168	4	Init: MW
1					132	96	0.16 J	Larvae: Pupae: Midge: 10 /10
2					end: 21.1	end: 10.9		Larvae: Pupae: Midge: 10 /10
3					start: 17.8	start: 6.1		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.3	Titrant used (mL): 4.8		Larvae: Pupae: Midge: 7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 8 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.7	7.39	3.6	306				Larvae: Pupae: Midge: 9 /10
8	22.6	7.48	4.3	304				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLV

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10223	Test Photoperiod:	16:8
Sample ID:	SS 1033-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~1~~ DS 550 chemistries time/Initial

Number Daily Renewals: 1
~~1740~~ KS renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☐ no ☒ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: Mur
1					140	104	0.19 J	Larvae: Pupae: Midge: 10 /10
2					end: 24.6	end: 16.1		Larvae: Pupae: Midge: 9 /10
3					start: 21.1	start: 10.9		Larvae: Pupae: Midge: 9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.2		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 7 /10
6								Larvae: Pupae: Midge: 9 /10
7	22.8	7.57	3.7	323				Larvae: Pupae: Midge: 9 /10
8	22.8	7.81	3.9	326				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit ~~(0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10224	Test Photoperiod:	16:8
Sample ID:	SS 1034-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 550 chemistries time/Initial

Number Daily Renewals: /
~~1740~~ 15 renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: [illegible]
1					124	90	0.30	Larvae: Pupae: Midge: 10 /10
2					end: 27.7	end: 20.6		Larvae: Pupae: Midge: 8 /10
3					start: 24.6	start: 16.1		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.1	Titrant used (mL): 4.5		Larvae: Pupae: Midge: 8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 9 /10
7	22.8	7.28	4.3	305				Larvae: Pupae: Midge: 9 /10
8	23.2	7.41	4.2	303				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit ~~(0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: ML✓

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10225	Test Photoperiod:	16:8
Sample ID:	SS 1002-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~DS~~ 550 chemistries time/Initial

Number Daily Renewals: 1
~~1740~~ KS renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: NW
1					132	100	0.22	Larvae: Pupae: Midge: 9 /10
2					end: 31.0	end: 25.6		Larvae: Pupae: Midge: 10 /10
3					start: 27.7	start: 20.6		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.3	Titrant used (mL): 5.0		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 8 /10
6								Larvae: Pupae: Midge: 7 /10
7	23.1	7.56	4.9	318				Larvae: Pupae: Midge: 8 /10
8	23.3	7.60	5.1	314				Larvae: Pupae: Midge: 8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10226	Test Photoperiod:	16:8
Sample ID:	SS 1005-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ DS 550 chemistries time/Initial

Number Daily Renewals: 1
~~1740 KS~~ renewal time/Initials ☐ ~~renewal~~
☐ ~~renewal time/Initials~~ ☐ ~~renewal~~
Food: ~~TFS# (4g/L)~~ ☐ ~~Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					144	98	0.13 J	Larvae: Pupae: Midge: 8 /10
2					end: 34.6	end: 30.5		Larvae: Pupae: Midge: 9 /10
3					start: 31.0	start: 25.6		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.6	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 7 /10
6								Larvae: Pupae: Midge: 9 /10
7	23.0	7.50	5.5	307				Larvae: Pupae: Midge: 7 /10
8	23.2	7.51	5.3	311				Larvae: Pupae: Midge: 8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10254	Test Photoperiod:	16:8
Sample ID:	SS 1041-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~1005~~ 550 chemistries time/Initial

Number Daily Renewals: 1
~~1040~~ KS renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~TFS# (4g/L)~~ ~~□ Feed 1.5 ml/replicate~~
Screens Cleaned: □ yes ☑ no □ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MW
1					144	98	0.15 J	Larvae: Pupae: Midge: 10 /10
2					end: 38.7	end: 35.4		Larvae: Pupae: Midge: 8 /10
3					start: 34.6	start: 30.5		Larvae: Pupae: Midge: 10 /10
4					Titrant used (mL): 3.6	Titrant used (mL): 4.9		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 10 /10
7	23.1	7.48	5.2	310				Larvae: Pupae: Midge: 10 /10
8	23.1	7.54	4.8	313				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.1 mg/L~~) 0.20 DS 12/6/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Hole Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	10256	Test Photoperiod:	16:8
Sample ID:	SS 1012-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 550 chemistries time/Initial

Number Daily Renewals: 1
~~1740 KS~~ renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	168	175	113	N/A	168	4	Init: MWr
1					124	88	0.23	Larvae: Pupae: Midge: 9 /10
2					end: 41.3	end: 39.8		Larvae: Pupae: Midge: 7 /10
3					start: 38.2	start: 35.4		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.1	Titrant used (mL): 4.4		Larvae: Pupae: Midge: 5 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 9 /10
6								Larvae: Pupae: Midge: 8 /10
7	23.0	7.36	6.5	290.0				Larvae: Pupae: Midge: 10 /10
8	22.9	7.35	5.8	293.1				Larvae: Pupae: Midge: 10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

QC'd by: MLV

2290-02
Stantec St. Louis River
Chironomus dilutus 10-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-02	Project Name:	Stantec St. Louis River
GLC#:	Water Only	Test Photoperiod:	16:8
Sample ID:	Secondary Control	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Chironomus dilutus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	abs 10/11 days
Test Initiation Date:	11/4/2014	Test Termination Date:	11/14/2014

Test Day: Day 10
Date: 11/14/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 550 chemistries time/Initial

Number Daily Renewals: 1
☐ renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~TFS# (4g/L)~~ ~~☐ Feed 1.5 ml/replicate~~
Screens Cleaned: ☐ yes ☐ no ☑ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	113	166	175	113	N/A	168	4	Init: [illegible]
1					136	106	0.49	Larvae: Pupae: Midge: 10 /10
2					end: 7.2	end: 11.9		Larvae: Pupae: Midge: 9 /10
3					start: 3.8	start: 6.6		Larvae: Pupae: Midge: 8 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.3		Larvae: Pupae: Midge: 10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		Larvae: Pupae: Midge: 10 /10
6								Larvae: Pupae: Midge: 10 /10
7	22.3	7.66	6.0	315				Larvae: Pupae: Midge: 9 /10
8	22.6	7.67	6.0	314				Larvae: Pupae: Midge: 8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (~~0.10~~ mg/L). 0.20 DS 1/26/15
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible

revised: June 2012

Page 1 of 2 nw 2/10/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**124**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**Laboratory Control**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 nw	Ashed Weigh Date / Technician's Initials: 11/25/14 nw

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.84972	0.83557	0.00000	10	#DIV/0!	0	0.00000
Laboratory Control	2	10	0.86629	0.84604	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85736	0.84577	0.00000	10	#DIV/0!	0	0.00000
124	4	10	0.86620	0.85325	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.85760	0.84380	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.85140	0.83924	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.87093	0.85745	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.86790	0.85408	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	0	80	Average at Day 0 (mg) 0.14013		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**LCS 124**	Drying Duration (Hours): **~ 24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**Laboratory Control**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.84972	0.83557	0.01415	10	1.41500	0	1.41500
Laboratory Control	2	10	0.86029	0.84604	0.01425	10	1.42500	0	1.42500
GLC Number:	3	10	0.85736	0.84577	0.01159	10	1.15900	0	1.15900
LCS 124	4	10	0.86620	0.85325	0.01295	10	1.29500	0	1.29500
	5	10	0.85760	0.84380	0.01380	10	1.38000	0	1.38000
	6	10	0.85140	0.83924	0.01216	10	1.21600	0	1.21600
	7	10	0.87093	0.85745	0.01348	10	1.34800	0	1.34800
	8	10	0.86790	0.85408	0.01382	10	1.38200	0	1.38200
						AVERAGE:	1.32750		1.32750

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 MW 2/10/15

QC'd by: DJ

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**Water Only**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**Secondary Control**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 11/25/14 MW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85855	0.84891	0.00000	10	#DIV/0!	0	0.00000
Secondary Control	2	10	0.89015	0.88124	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.87328	0.86650	0.00000	8	#DIV/0!	0	0.00000
Water Only	4	10	0.88670	0.87794	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86253	0.85371	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.85800	0.84945	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.88038	0.86976	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.85721	0.85182	0.00000	8	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See Control page day 0 MW 2/10/15	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**water only**	Drying Duration (Hours): **~24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**Secondary Control**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85855	0.84891	0.00964	10	0.96400	0	0.96400
Secondary Control	2	10	0.89015	0.88124	0.00891	9	0.99000	0	0.89100
GLC Number:	3	10	0.87328	0.86650	0.00678	8	0.84750	0	0.67800
water only	4	10	0.88670	0.87794	0.00876	10	0.87600	0	0.87600
	5	10	0.86253	0.85371	0.00882	10	0.88200	0	0.88200
	6	10	0.85800	0.84945	0.00855	10	0.85500	0	0.85500
	7	10	0.88038	0.86976	0.01062	9	1.18000	0	1.06200
	8	10	0.85721	0.85182	0.00539	8	0.67375	0	0.53900
						AVERAGE:	0.90853		0.84337

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 8/10/15

QC'd by: DS

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10207**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1022-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: # 128
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85112	0.84542	0.00000	7	#DIV/0!	0	0.00000
SS 1022-AT	2	10	0.85306	0.84520	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85926	0.85243	0.00000	9	#DIV/0!	0	0.00000
10207	4	10	0.84718	0.84240	0.00000	6	#DIV/0!	0	0.00000
	5	10	0.85366	0.84585	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.85530	0.84833	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.84569	0.83989	0.00000	7	#DIV/0!	0	0.00000
	8	10	0.85785	0.85037	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10207**	Drying Duration (Hours): **~ 24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1022-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85112	0.84542	0.00570	7	0.81429	0	0.57000
SS 1022-AT	2	10	0.85306	0.84520	0.00786	9	0.87333	0	0.78600
GLC Number:	3	10	0.85920	0.85243	0.00677	9	0.75222	0	0.67700
10207	4	10	0.84718	0.84240	0.00478	6	0.79667	0	0.47800
	5	10	0.85366	0.84585	0.00781	9	0.86778	0	0.78100
	6	10	0.85530	0.84833	0.00697	10	0.69700	0	0.69700
	7	10	0.84569	0.83989	0.00580	7	0.82857	0	0.58000
	8	10	0.85785	0.85037	0.00748	10	0.74800	0	0.74800
						AVERAGE:	0.79723		0.66463

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 2/12/15
QC'd by: DS

GLEC
Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10208**	Drying Duration (Hours): **~ 24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1024-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 179	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85594	0.84777	0.00000	9	#DIV/0!	0	0.00000
SS 1024-AT	2	10	0.86441	0.85618	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86158	0.85286	0.00000	9	#DIV/0!	0	0.00000
10208	4	10	0.84778	0.84006	0.00000	7	#DIV/0!	0	0.00000
	5	10	0.86258	0.85368	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.86594	0.85844	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.86690	0.85933	0.00000	8	#DIV/0!	0	0.00000
	8	10	0.86753	0.85830	0.00000	9	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See page Control		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10208**	Drying Duration (Hours): **~ 24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1024-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85594	0.84777	0.00817	9	0.90778	0	0.81700
SS 1024-AT	2	10	0.86441	0.85618	0.00823	9	0.91444	0	0.82300
GLC Number:	3	10	0.86158	0.85286	0.00872	9	0.96889	0	0.87200
10208	4	10	0.84778	0.84006	0.00772	7	1.10286	0	0.77200
	5	10	0.86258	0.85368	0.00890	10	0.89000	0	0.89000
	6	10	0.86594	0.85844	0.00750	9	0.83333	0	0.75000
	7	10	0.86690	0.85933	0.00757	8	0.94625	0	0.75700
	8	10	0.86753	0.85830	0.00923	9	1.02556	0	0.92300
						AVERAGE:	0.94864		0.82550

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 MW 02/10/15

QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10209**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1032-AT**	Date/Time in: 11/14/14 1305	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 1030	Date/Time out: 12/2/14 1003
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: KS 12/2/14

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85629	0.84940	0.00000	9	#DIV/0!	0	0.00000
SS 1032-AT	2	10	0.86044	0.85369	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.87587	0.86769	0.00000	10	#DIV/0!	0	0.00000
10209	4	10	0.86356	0.85581	0.00000	9	#DIV/0!	0	0.00000
	5	10	0.86779	0.85865	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.86526	0.85811	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.87086	0.86559	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.86194	0.85446	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See Control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10209**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1032-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	12/2/2014 10:03
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85629	0.84940	0.00689	9	0.76556	0	0.68900
SS 1032-AT	2	10	0.86044	0.85369	0.00675	10	0.67500	0	0.67500
GLC Number:	3	10	0.87587	0.86769	0.00818	10	0.81800	0	0.81800
10209	4	10	0.86356	0.85581	0.00775	9	0.86111	0	0.77500
	5	10	0.86779	0.85865	0.00914	10	0.91400	0	0.91400
	6	10	0.86526	0.85811	0.00715	10	0.71500	0	0.71500
	7	10	0.87086	0.86559	0.00527	9	0.58556	0	0.52700
	8	10	0.86194	0.85446	0.00748	10	0.74800	0	0.74800
						AVERAGE:	0.76028		0.73263

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 12/10/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10210**	Drying Duration (Hours): **~ 24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1021-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85554	0.84627	0.00000	9	#DIV/0!	0	0.00000
SS 1021-AT	2	10	0.86517	0.85899	0.00000	8	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85937	0.85158	0.00000	10	#DIV/0!	0	0.00000
10210	4	10	0.85706	0.84896	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86344	0.85610	0.00000	8	#DIV/0!	0	0.00000
	6	10	0.86900	0.86152	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.85363	0.84550	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.86687	0.85869	0.00000	8	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

Page 2 of 2
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven:	**Blue M**	Type/Model of Muffle Furnace:	**F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**	Muffle Furnace Temperature:	**550 °C**
GLC#:	**10210**	Drying Duration (Hours):	**~ 24 hrs**	Drying Duration (Hours):	**2 hrs**
Sample ID:	**SS 1021-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85554	0.84627	0.00927	9	1.03000	0	0.92700
SS 1021-AT	2	10	0.86517	0.85899	0.00618	8	0.77250	0	0.61800
GLC Number:	3	10	0.85937	0.85158	0.00779	10	0.77900	0	0.77900
10210	4	10	0.85706	0.84896	0.00810	10	0.81000	0	0.81000
	5	10	0.86344	0.85610	0.00734	8	0.91750	0	0.73400
	6	10	0.86900	0.86152	0.00748	9	0.83111	0	0.74800
	7	10	0.85363	0.84550	0.00813	10	0.81300	0	0.81300
	8	10	0.86687	0.85869	0.00818	8	1.02250	0	0.81800
						AVERAGE:	0.87195		0.78088

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 MW 2/10/15
QC'd by: DS

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10212**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1026-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/25/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/13/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 11/25/14 MW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85556	0.84494	0.00000	10	#DIV/0!	0	0.00000
SS 1026-AT	2	10	0.86135	0.85264	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85821	0.84857	0.00000	10	#DIV/0!	0	0.00000
10212	4	10	0.84851	0.83901	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86478	0.85580	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.85562	0.84714	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.85726	0.84834	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.85185	0.84330	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2

QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10212**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1026-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85556	0.84494	0.01062	10	1.06200	0	1.06200
SS 1026-AT	2	10	0.86135	0.85264	0.00871	9	0.96778	0	0.87100
GLC Number:	3	10	0.85821	0.84857	0.00964	10	0.96400	0	0.96400
10212	4	10	0.84851	0.83901	0.00950	10	0.95000	0	0.95000
	5	10	0.86478	0.85580	0.00898	10	0.89800	0	0.89800
	6	10	0.85600	0.84714	0.00886	10	0.88600	0	0.88600
	7	10	0.85726	0.84834	0.00892	10	0.89200	0	0.89200
	8	10	0.85185	0.84330	0.00855	10	0.85500	0	0.85500
						AVERAGE:	0.93435		0.92225

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 2/10/15

QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: Blue M	Type/Model of Muffle Furnace: F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature: 60 °C	Muffle Furnace Temperature: 550 °C
GLC#:	10213	Drying Duration (Hours): ~24 hrs	Drying Duration (Hours): 2 hrs
Sample ID:	SS 1028-AT	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	*Chironomus dilutus*	Dessicator: # 129	Dessicator: # 128
Test Date:	11/4/2014	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85671	0.84656	0.00000	10	#DIV/0!	0	0.00000
SS 1028-AT	2	10	0.85916	0.84892	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85592	0.84670	0.00000	9	#DIV/0!	0	0.00000
10213	4	10	0.85664	0.84775	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.84999	0.84044	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.85003	0.84158	0.00000	8	#DIV/0!	0	0.00000
	7	10	0.86381	0.85530	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.86377	0.85266	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10213**	Drying Duration (Hours): **~24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1028-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.85671	0.84656	0.01015	10	1.01500	0	1.01500
SS 1028-AT	**2**	10	0.85916	0.84892	0.01024	10	1.02400	0	1.02400
GLC Number:	**3**	10	0.85592	0.84670	0.00922	9	1.02444	0	0.92200
10213	**4**	10	0.85664	0.84775	0.00889	8	1.11125	0	0.88900
	5	10	0.84999	0.84044	0.00955	9	1.06111	0	0.95500
	6	10	0.85003	0.84158	0.00845	8	1.05625	0	0.84500
	7	10	0.86381	0.85530	0.00851	10	0.85100	0	0.85100
	8	10	0.86377	0.85266	0.01111	10	1.11100	0	1.11100
						AVERAGE:	1.03176		0.95150

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 2/10/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10214**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1025-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 12/2/14 1005
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86172	0.85306	0.00000	10	#DIV/0!	0	0.00000
SS 1025-AT	2	10	0.86294	0.85436	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85140	0.84349	0.00000	9	#DIV/0!	0	0.00000
10214	4	10	0.85898	0.85045	0.00000	9	#DIV/0!	0	0.00000
	5	10	0.85987	0.85095	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.85126	0.84436	0.00000	8	#DIV/0!	0	0.00000
	7	10	0.85749	0.84946	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.86257	0.85370	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10214**	Drying Duration (Hours): **~ 24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1025-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	12/2/2014 10:05
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86172	0.85306	0.00866	10	0.86600	0	0.86600
SS 1025-AT	2	10	0.86294	0.85436	0.00858	10	0.85800	0	0.85800
GLC Number:	3	10	0.85140	0.84349	0.00791	9	0.87889	0	0.79100
10214	4	10	0.85898	0.85045	0.00853	9	0.94778	0	0.85300
	5	10	0.85987	0.85095	0.00892	10	0.89200	0	0.89200
	6	10	0.85126	0.84436	0.00690	8	0.86250	0	0.69000
	7	10	0.85749	0.84946	0.00803	9	0.89222	0	0.80300
	8	10	0.86257	0.85370	0.00887	10	0.88700	0	0.88700
						AVERAGE:	0.88555		0.83000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page ~~10~~ 1 of ~~23~~ 2 NW 2/10/15

QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10215**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1010-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85631	0.84968	0.00000	8	#DIV/0!	0	0.00000
SS 1010-AT	2	10	0.86232	0.85516	0.00000	8	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85601	0.84899	0.00000	8	#DIV/0!	0	0.00000
10215	4	10	0.86229	0.85462	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.86489	0.85585	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.86799	0.85848	0.00000	8	#DIV/0!	0	0.00000
	7	10	0.85619	0.84772	0.00000	8	#DIV/0!	0	0.00000
	8	10	0.85615	0.84683	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven:	Blue M		Type/Model of Muffle Furnace:	F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature:	60 °C		Muffle Furnace Temperature:	550 °C
GLC#:	10215	Drying Duration (Hours):	~24 hrs		Drying Duration (Hours):	2 hrs
Sample ID:	SS 1010-AT	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/18/2014 13:30
Test Species:	*Chironomus dilutus*	Dessicator:	# 129		Dessicator:	# 128
Test Date:	11/4/2014	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13		Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85631	0.84968	0.00663	8	0.82875	0	0.66300
SS 1010-AT	2	10	0.86232	0.85516	0.00716	8	0.89500	0	0.71600
GLC Number:	3	10	0.85601	0.84899	0.00702	8	0.87750	0	0.70200
10215	4	10	0.86229	0.85462	0.00767	8	0.95875	0	0.76700
	5	10	0.86489	0.85585	0.00904	10	0.90400	0	0.90400
	6	10	0.86799	0.85848	0.00951	8	1.18875	0	0.95100
	7	10	0.85619	0.84772	0.00847	8	1.05875	0	0.84700
	8	10	0.85615	0.84683	0.00932	10	0.93200	0	0.93200
						AVERAGE:	0.95544		0.81025

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 11 of 23 2/10/15
QC'd by: DS

GLEC
Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10216**	Drying Duration (Hours): **~ 24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1029-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1320
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.87882	0.87114	0.00000	10	#DIV/0!	0	0.00000
SS 1029-AT	2	10	0.87380	0.86533	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86420	0.85600	0.00000	10	#DIV/0!	0	0.00000
10216	4	10	0.86988	0.86110	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86457	0.85641	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.87154	0.86155	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.88574	0.87601	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.86761	0.85983	0.00000	9	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10216**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1029-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13	Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.87882	0.87114	0.00768	10	0.76800	0	0.76800
SS 1029-AT	2	10	0.87380	0.86533	0.00847	9	0.94111	0	0.84700
GLC Number:	3	10	0.86420	0.85600	0.00820	10	0.82000	0	0.82000
10216	4	10	0.86988	0.86110	0.00878	10	0.87800	0	0.87800
	5	10	0.86457	0.85641	0.00816	9	0.90667	0	0.81600
	6	10	0.87154	0.86155	0.00999	10	0.99900	0	0.99900
	7	10	0.88574	0.87601	0.00973	10	0.97300	0	0.97300
	8	10	0.86761	0.85983	0.00778	9	0.86444	0	0.77800
						AVERAGE:	0.89378		0.85987

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 12 of 23 (1 2) NWC 2/10/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10217**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1001-AT**	Date/Time in: 11/14/14 1300	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/~~25~~ 24/14 1215 NWC 11/24/14
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NWC	Ashed Weigh Date / Technician's Initials: 11/25/14 NWC

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86414	0.85511	0.00000	8	#DIV/0!	0	0.00000
SS 1001-AT	2	10	0.87301	0.86477	0.00000	5	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86535	0.85813	0.00000	8	#DIV/0!	0	0.00000
10217	4	10	0.85144	0.84480	0.00000	7	#DIV/0!	0	0.00000
	5	10	0.86400	0.85634	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.84373	0.83749	0.00000	7	#DIV/0!	0	0.00000
	7	10	0.86210	0.85440	0.00000	8	#DIV/0!	0	0.00000
	8	10	0.86888	0.86064	0.00000	7	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10217**	Drying Duration (Hours): **~ 24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1001-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.86414	0.85511	0.00903	8	1.12875	0	0.90300
SS 1001-AT	**2**	10	0.87301	0.86477	0.00824	5	1.64800	0	0.82400
GLC Number:	**3**	10	0.86535	0.85813	0.00722	8	0.90250	0	0.72200
10217	**4**	10	0.85144	0.84480	0.00664	7	0.94857	0	0.66400
	5	10	0.86400	0.85634	0.00766	9	0.85111	0	0.76600
	6	10	0.84373	0.83749	0.00624	7	0.89143	0	0.62400
	7	10	0.86210	0.85440	0.00770	8	0.96250	0	0.77000
	8	10	0.86888	0.86064	0.00824	7	1.17714	0	0.82400
						AVERAGE:	1.06375		0.76212

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page ~~15~~ 1 of ~~23~~ 2 NW 2/10/15
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10218**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1042-AT**	Date/Time in: 11/14/14 1310	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.87506	0.86344	0.00000	8	#DIV/0!	0	0.00000
SS 1042-AT	2	10	0.87953	0.86991	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86698	0.85905	0.00000	8	#DIV/0!	0	0.00000
10218	4	10	0.87788	0.87000	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.88446	0.87522	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.87284	0.86132	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.87994	0.87024	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.87511	0.86432	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10218**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1042-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.87506	0.86344	0.01162	8	1.45250	0	1.16200
SS 1042-AT	**2**	10	0.87953	0.86991	0.00962	10	0.96200	0	0.96200
GLC Number:	**3**	10	0.86698	0.85905	0.00793	8	0.99125	0	0.79300
10218	**4**	10	0.87788	0.87000	0.00788	8	0.98500	0	0.78800
	5	10	0.88446	0.87522	0.00924	10	0.92400	0	0.92400
	6	10	0.87284	0.86132	0.01152	10	1.15200	0	1.15200
	7	10	0.87994	0.87024	0.00970	10	0.97000	0	0.97000
	8	10	0.87511	0.86432	0.01079	10	1.07900	0	1.07900
						AVERAGE:	1.06447		0.97875

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NR 2/10/15
QC'd by: DJ

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10219**	Drying Duration (Hours): **~ 24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1009-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1158
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 12/2/14 1158 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.87196	0.86247	0.00000	7	#DIV/0!	0	0.00000
SS 1009-AT	2	10	0.88946	0.88051	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86426	0.85790	0.00000	6	#DIV/0!	0	0.00000
10219	4	10	0.88440	0.87375	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86960	0.86132	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.87167	0.86231	0.00000	7	#DIV/0!	0	0.00000
	7	10	0.86495	0.85477	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.87420	0.86451	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See Control page			0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10219**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1009-AT**	Date/Time in: 11/14/2014	12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out: 11/15/2014	12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator: **# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in: 11/15/2014 12:15		Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out: 11/18/2014 9:13		Date/Time out:	12/2/2014 11:58
		Dry Weigh Date / Technician's Initials: 11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.87196	0.86247	0.00949	7	1.35571	0	0.94900
SS 1009-AT	2	10	0.88946	0.88051	0.00895	9	0.99444	0	0.89500
GLC Number:	3	10	0.86426	0.85790	0.00636	6	1.06000	0	0.63600
10219	4	10	0.88440	0.87375	0.01065	10	1.06500	0	1.06500
	5	10	0.86960	0.86132	0.00828	10	0.82800	0	0.82800
	6	10	0.87167	0.86231	0.00936	7	1.33714	0	0.93600
	7	10	0.86495	0.85477	0.01018	10	1.01800	0	1.01800
	8	10	0.87420	0.86451	0.00969	10	0.96900	0	0.96900
						AVERAGE:	1.07841		0.91200

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 NW 2/10/15
QC'd by: DS

GLEC
Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10220**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1017-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/19/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85936	0.84952	0.00000	10	#DIV/0!	0	0.00000
SS 1017-AT	2	10	0.86204	0.85299	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86198	0.85165	0.00000	10	#DIV/0!	0	0.00000
10220	4	10	0.85724	0.84996	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.85694	0.84826	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.85886	0.85000	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.85284	0.84492	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.86144	0.85099	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10220**	Drying Duration (Hours): **~ 24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1017-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13		Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85936	0.84952	0.00984	10	0.98400	0	0.98400
SS 1017-AT	2	10	0.86204	0.85299	0.00905	10	0.90500	0	0.90500
GLC Number:	3	10	0.86198	0.85165	0.01033	10	1.03300	0	1.03300
10220	4	10	0.85724	0.84896	0.00828	8	1.03500	0	0.82800
	5	10	0.85694	0.84820	0.00874	9	0.97111	0	0.87400
	6	10	0.85886	0.85000	0.00886	9	0.98444	0	0.88600
	7	10	0.85284	0.84492	0.00792	10	0.79200	0	0.79200
	8	10	0.86144	0.85099	0.01045	10	1.04500	0	1.04500
						AVERAGE:	0.96869		0.91837

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2

QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10221**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1011-AT**	Date/Time in: 11/4/14 1200	Date/Time in: 11/18/14 1330
		Date/Time out: 11/5/14 1215	Date/Time out: 11/19/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/5/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 NV	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86613	0.85788	0.00000	10	#DIV/0!	0	0.00000
SS 1011-AT	2	10	0.84760	0.84180	0.00000	6	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86197	0.85408	0.00000	9	#DIV/0!	0	0.00000
10221	4	10	0.85826	0.84968	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.85761	0.84838	0.00000	10	#DIV/0!	0	0.00000
	6	10	0.86649	0.85881	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.85035	0.84342	0.00000	8	#DIV/0!	0	0.00000
	8	10	0.85649	0.84893	0.00000	9	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10221**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1011-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13	Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86613	0.85788	0.00825	10	0.82500	0	0.82500
SS 1011-AT	2	10	0.84760	0.84180	0.00580	6	0.96667	0	0.58000
GLC Number:	3	10	0.86197	0.85408	0.00789	9	0.87667	0	0.78900
10221	4	10	0.85826	0.84968	0.00858	8	1.07250	0	0.85800
	5	10	0.85761	0.84838	0.00923	10	0.92300	0	0.92300
	6	10	0.86649	0.85881	0.00768	9	0.85333	0	0.76800
	7	10	0.85035	0.84342	0.00693	8	0.86625	0	0.69300
	8	10	0.85649	0.84893	0.00756	9	0.84000	0	0.75600
						AVERAGE:	0.90293		0.77400

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2

QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: Blue M	Type/Model of Muffle Furnace: F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature: 60 °C	Muffle Furnace Temperature: 550 °C
GLC#:	10222	Drying Duration (Hours): ~ 24 hrs	Drying Duration (Hours): 2 hrs
Sample ID:	SS 1031-AT	Date/Time in: 11/14/14 1900	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	*Chironomus dilutus*	Dessicator: # 128	Dessicator: # 128
Test Date:	11/4/2014	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86313	0.85236	0.00000	10	#DIV/0!	0	0.00000
SS 1031-AT	2	10	0.86257	0.85459	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.87231	0.86300 12/2/14 KS	0.00000	10	#DIV/0!	0	0.00000
10222	4	10	0.86542	0.85761	0.00000	7	#DIV/0!	0	0.00000
	5	10	0.85471	0.84783	0.00000	8	#DIV/0!	0	0.00000
	6	10	0.85915	0.85016	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.85503	0.84762	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.85846	0.84965	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10222**	Drying Duration (Hours): **~24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1031-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13		Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86313	0.85236	0.01077	10	1.07700	0	1.07700
SS 1031-AT	2	10	0.86257	0.85458	0.00799	10	0.79900	0	0.79900
GLC Number:	3	10	0.87231	0.86306	0.00925	10	0.92500	0	0.92500
10222	4	10	0.86542	0.85761	0.00781	7	1.11571	0	0.78100
	5	10	0.85471	0.84783	0.00688	8	0.86000	0	0.68800
	6	10	0.85915	0.85016	0.00899	10	0.89900	0	0.89900
	7	10	0.85503	0.84762	0.00741	9	0.82333	0	0.74100
	8	10	0.85846	0.84965	0.00881	10	0.88100	0	0.88100
						AVERAGE:	0.92251		0.84887

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page ~~18~~ 1 of ~~23~~ 2

QC'd by: DS

GLEC
Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10223**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1033-AT**	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 ~~1003~~ 12/23/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85275	0.84371	0.00000	10	#DIV/0!	0	0.00000
SS 1033-AT	2	10	0.86540	0.95660	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85481	0.84571	0.00000	9	#DIV/0!	0	0.00000
10223	4	10	0.85882	0.84982	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86857	0.85974	0.00000	7	#DIV/0!	0	0.00000
	6	10	0.86869	0.85977	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.87089	0.86197	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.86240	0.85175	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

Page 2 of 2
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10223**	Drying Duration (Hours): **~ 24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1033-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13	Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85275	0.84371	0.00904	10	0.90400	0	0.90400
SS 1033-AT	2	10	0.86540	0.85660	0.00880	9	0.97778	0	0.88000
GLC Number:	3	10	0.85481	0.84571	0.00910	9	1.01111	0	0.91000
10223	4	10	0.85882	0.84982	0.00900	10	0.90000	0	0.90000
	5	10	0.86857	0.85974	0.00883	7	1.26143	0	0.88300
	6	10	0.86869	0.85977	0.00892	9	0.99111	0	0.89200
	7	10	0.87089	0.86197	0.00892	9	0.99111	0	0.89200
	8	10	0.86240	0.85175	0.01065	10	1.06500	0	1.06500
						AVERAGE:	1.01269		0.91575

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 mw 2/11/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: Blue M	Type/Model of Muffle Furnace: F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature: 60 °C	Muffle Furnace Temperature: 550 °C
GLC#:	10224	Drying Duration (Hours): ~24 hrs	Drying Duration (Hours): 2 hrs
Sample ID:	SS 1034-AT	Date/Time in: 11/14/14 1200	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	*Chironomus dilutus*	Dessicator: # 129	Dessicator: # 128
Test Date:	11/4/2014	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 mw	Ashed Weigh Date / Technician's Initials: 11/25/14 mw

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86586	0.85691	0.00000	10	#DIV/0!	0	0.00000
SS 1034-AT	2	10	0.86032	0.85263	0.00000	8	#DIV/0!	0	0.00000
GLC Number:	3	10	0.86255	0.85603	0.00000	8	#DIV/0!	0	0.00000
10224	4	10	0.86294	0.85452	0.00000	8	#DIV/0!	0	0.00000
	5	10	0.85183	0.84417	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.86714	0.85876	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.85368	0.84576	0.00000	9	#DIV/0!	0	0.00000
	8	10	0.86122	0.85257	0.00000	10	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10224**	Drying Duration (Hours): **~ 24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1034-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.86586	0.85691	0.00895	10	0.89500	0	0.89500
SS 1034-AT	**2**	10	0.86032	0.85263	0.00769	8	0.96125	0	0.76900
GLC Number:	**3**	10	0.86255	0.85603	0.00652	8	0.81500	0	0.65200
10224	**4**	10	0.86294	0.85452	0.00842	8	1.05250	0	0.84200
	5	10	0.85183	0.84417	0.00766	9	0.85111	0	0.76600
	6	10	0.86714	0.85876	0.00838	9	0.93111	0	0.83800
	7	10	0.85368	0.84576	0.00792	9	0.88000	0	0.79200
	8	10	0.86122	0.85257	0.00865	10	0.86500	0	0.86500
						AVERAGE:	0.90637		0.80238

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights		80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2 mw 2/10/15
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: Blue M	Type/Model of Muffle Furnace: F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature: 60 °C	Muffle Furnace Temperature: 550 °C
GLC#:	10225	Drying Duration (Hours): ~ 24 hrs	Drying Duration (Hours): 2 hrs
Sample ID:	SS 1002-AT	Date/Time in: 11/14/14 1210	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	*Chironomus dilutus*	Dessicator: # 729	Dessicator: # 128
Test Date:	11/4/2014	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1300
		Dry Weigh Date / Technician's Initials: 11/18/14 mw	Ashed Weigh Date / Technician's Initials: 11/25/14 mw

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86870	0.85896	0.00000	9	#DIV/0!	0	0.00000
SS 1002-AT	2	10	0.85929	0.85301	0.00000	10	#DIV/0!	0	0.00000
GLC Number:	3	10	0.85466	0.84636	0.00000	10	#DIV/0!	0	0.00000
10225	4	10	0.87180	0.86324	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86405	0.85532	0.00000	8	#DIV/0!	0	0.00000
	6	10	0.86279	0.85436	0.00000	7	#DIV/0!	0	0.00000
	7	10	0.85905	0.85220	0.00000	8	#DIV/0!	0	0.00000
	8	10	0.85400	0.84700	0.00000	8	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**			Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			Muffle Furnace Temperature: **550 °C**	
GLC#:	**10225**	Drying Duration (Hours): **~24 hrs**			Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1002-AT**	Date/Time in:	11/14/2014	12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014	12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**		Dessicator: **# 128**	
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15		Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00		Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg		Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.86870	0.85896	0.00974	9	1.08222	0	0.97400
SS 1002-AT	2	10	0.85929	0.85301	0.00628	10	0.62800	0	0.62800
GLC Number:	3	10	0.85466	0.84636	0.00830	10	0.83000	0	0.83000
10225	4	10	0.87180	0.86324	0.00856	10	0.85600	0	0.85600
	5	10	0.86405	0.85532	0.00873	8	1.09125	0	0.87300
	6	10	0.86279	0.85436	0.00843	7	1.20429	0	0.84300
	7	10	0.85905	0.85220	0.00685	8	0.85625	0	0.68500
	8	10	0.85400	0.84700	0.00700	8	0.87500	0	0.70000
						AVERAGE:	0.92788		0.79863

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page ~~21~~ 1 of ~~23~~ 2 NW 2/10/15
QC'd by: DS

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10226**	Drying Duration (Hours): **~24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1005-AT**	Date/Time in: 11/14/14 1220	Date/Time in: 11/24/14 1010
		Date/Time out: 11/15/14 1215	Date/Time out: 11/24/14 1215
Test Species:	***Chironomus dilutus***	Dessicator: # 129	Dessicator: **# 128**
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/24/14 1330
	11/14/2014	Date/Time out: 11/18/14 1000	Date/Time out: 11/25/14 1350
		Dry Weigh Date / Technician's Initials: 11/18/14 NW	Ashed Weigh Date / Technician's Initials: 11/25/14 NW

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.85636	0.84893	0.00000	8	#DIV/0!	0	0.00000
SS 1005-AT	2	10	0.88658	0.87875	0.00000	9	#DIV/0!	0	0.00000
GLC Number:	3	10	0.87962	0.87308	0.00000	8	#DIV/0!	0	0.00000
10226	4	10	0.87877	0.87203	0.00000	7	#DIV/0!	0	0.00000
	5	10	0.87344	0.86888	0.00000	7	#DIV/0!	0	0.00000
	6	10	0.88311	0.87524	0.00000	9	#DIV/0!	0	0.00000
	7	10	0.87778	0.87191	0.00000	7	#DIV/0!	0	0.00000
	8	10	0.85606	0.84775	0.00000	8	#DIV/0!	0	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	see control page	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10226**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1005-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/24/2014 10:10
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/24/2014 12:15
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/24/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 10:00	Date/Time out:	11/25/2014 13:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	11/25/14 mwg

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.85636	0.84893	0.00743	8	0.92875	0	0.74300
SS 1005-AT	**2**	10	0.88658	0.87875	0.00783	9	0.87000	0	0.78300
GLC Number:	**3**	10	0.87962	0.87308	0.00654	8	0.81750	0	0.65400
10226	**4**	10	0.87877	0.87203	0.00674	7	0.96286	0	0.67400
	5	10	0.87344	0.86888	0.00456	7	0.65143	0	0.45600
	6	10	0.88311	0.87524	0.00787	9	0.87444	0	0.78700
	7	10	0.87778	0.87191	0.00587	7	0.83857	0	0.58700
	8	10	0.85606	0.84775	0.00831	8	1.03875	0	0.83100
						AVERAGE:	0.87279		0.68938

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 2 of 3 2/10/15
QC'd by: DS

GLEC

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: **Blue M**	Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	Muffle Furnace Temperature: **550 °C**
GLC#:	**10254**	Drying Duration (Hours): **~ 24 hrs**	Drying Duration (Hours): **2 hrs**
Sample ID:	**SS 1041-AT**	Date/Time in: 11/14/14 1205	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	***Chironomus dilutus***	Dessicator: # 128	Dessicator: # 128
Test Date:	**11/4/2014**	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 [illegible]	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.88022	0.87295	0.00000	10	#DIV/0!	0	0.00000
SS 1041-AT	2	10	0.87299	0.86551	0.00000	8	#DIV/0!	0	0.00000
GLC Number:	3	10	0.87704	0.86983	0.00000	10	#DIV/0!	0	0.00000
10254	4	10	0.86276	0.85498	0.00000	10	#DIV/0!	0	0.00000
	5	10	0.86483	0.85670	0.00000	9	#DIV/0!	0	0.00000
	6	10	0.86595	0.85925	0.00000	10	#DIV/0!	0	0.00000
	7	10	0.89740	0.88926	0.00000	10	#DIV/0!	0	0.00000
	8	10	0.89364	0.88456	0.00000	10	#DIV/0!	0	0.00000
				12/2/14 KS		AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10254**	Drying Duration (Hours): **~24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1041-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13	Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.88022	0.87295	0.00727	10	0.72700	0	0.72700
SS 1041-AT	2	10	0.87299	0.86551	0.00748	8	0.93500	0	0.74800
GLC Number:	3	10	0.87704	0.86983	0.00721	10	0.72100	0	0.72100
10254	4	10	0.86276	0.85498	0.00778	10	0.77800	0	0.77800
	5	10	0.86483	0.85670	0.00813	9	0.90333	0	0.81300
	6	10	0.86595	0.85925	0.00670	10	0.67000	0	0.67000
	7	10	0.89740	0.88926	0.00814	10	0.81400	0	0.81400
	8	10	0.89364	0.88441	0.00923	10	0.92300	0	0.92300
						AVERAGE:	0.80892		0.77425

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Page 1 of 2

QC'd by: DC

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	2290-02	Type/Model of Drying Oven: Blue M	Type/Model of Muffle Furnace: F6020 Thermolyne MOD.
Project Name:	Stantec St. Louis River	Oven Temperature: 60 °C	Muffle Furnace Temperature: 550 °C
GLC#:	10256	Drying Duration (Hours): ~24 hrs	Drying Duration (Hours): 2 hrs
Sample ID:	SS 1012-AT	Date/Time in: 11/14/14 1200	Date/Time in: 11/18/14 1130
		Date/Time out: 11/15/14 1215	Date/Time out: 11/18/14 1330
Test Species:	*Chironomus dilutus*	Dessicator: # 128	Dessicator: # 128
Test Date:	11/4/2014	Date/Time in: 11/15/14 1215	Date/Time in: 11/18/14 1330
	11/14/2014	Date/Time out: 11/18/14 0913	Date/Time out: 12/2/14 KS 1200
		Dry Weigh Date / Technician's Initials: 11/18/14 MW	Ashed Weigh Date / Technician's Initials: 12/2/14 KS

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	1	10	0.84905	0.83964	0.00000	9	#DIV/0!	0 9	0.00000
SS 1012-AT	2	10	0.85468	0.84962	0.00000	7	#DIV/0!	0 7	0.00000
GLC Number:	3	10	0.86346	0.85597	0.00000	8	#DIV/0!	0 8	0.00000
10256	4	10	0.84767	0.84406	0.00000	5	#DIV/0!	0 5	0.00000
	5	10	0.85849	0.85034	0.00000	9	#DIV/0!	0 9	0.00000
	6	10	0.86938	0.85437	0.00000	8	#DIV/0!	0 8	0.00000
	7	10	0.86452	0.85551	0.00000	10	#DIV/0!	0 10	0.00000
	8	10	0.86495	0.85462	0.00000	10	#DIV/0!	0 10	0.00000
						AVERAGE:	#DIV/0!		0.00000

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	Pel control pure	0	80	Average at Day 0 (mg)		0

See Attached sheet for calculated weights.

Page 2 of 2
QC'd by: DS

Great Lakes Environmental Center

2290-02
Stantec St. Louis River
Chironomus dilutus WEIGHT DATA

Project Number:	**2290-02**	Type/Model of Drying Oven: **Blue M**		Type/Model of Muffle Furnace: **F6020 Thermolyne MOD.**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		Muffle Furnace Temperature: **550 °C**	
GLC#:	**10256**	Drying Duration (Hours): **~ 24 hrs**		Drying Duration (Hours): **2 hrs**	
Sample ID:	**SS 1012-AT**	Date/Time in:	11/14/2014 12:00	Date/Time in:	11/18/2014 11:30
		Date/Time out:	11/15/2014 12:15	Date/Time out:	11/18/2014 13:30
Test Species:	***Chironomus dilutus***	Dessicator:	**# 129**	Dessicator:	**# 128**
Test Date:	**11/4/2014**	Date/Time in:	11/15/2014 12:15	Date/Time in:	11/18/2014 13:30
	11/14/2014	Date/Time out:	11/18/2014 9:13	Date/Time out:	12/2/2014 12:00
		Dry Weigh Date / Technician's Initials:	11/18/14 mwg	Ashed Weigh Date / Technician's Initials:	12/2/14 ks

	Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Ashed Weight of Pan and Organisms (g)	B-C Total Ash-Free Dry Weight (g)	D Number of Organisms Weighed	B-C/D Average Ash-Free Dry Weight (mg)	E Number of Pupae and Midges at Day 10	(B-C) / (A-E) *Biomass weight (mg)
Sample ID:	**1**	10	0.84905	0.83964	0.00941	9	1.04556	0	0.94100
SS 1012-AT	**2**	10	0.85468	0.84862	0.00606	7	0.86571	0	0.60600
GLC Number:	**3**	10	0.86346	0.85597	0.00749	8	0.93625	0	0.74900
10256	**4**	10	0.84767	0.84406	0.00361	5	0.72200	0	0.36100
	5	10	0.85849	0.85034	0.00815	9	0.90556	0	0.81500
	6	10	0.86938	0.85837	0.01101	8	1.37625	0	1.10100
	7	10	0.86452	0.85551	0.00901	10	0.90100	0	0.90100
	8	10	0.86495	0.85462	0.01033	10	1.03300	0	1.03300
						AVERAGE:	0.97317		0.81337

*Biomass weight (mg) : defined as the total ash-free dry weight of surviving organisms divided by the initial number of organisms minus pupae and midges

Day 0 weights	80	0.94097	0.92976	0.01121	80	Average at Day 0 (mg)		0.140125

Appendix C2
Chironomus dilutus
10-Day Statistical Data
Reference Sediment SS-1031-AT

- Survival
- Weight

Test: EPA 100.2-Chironomus dilutus 10d Survival and Growth Test
Species: CDIL-Chironomus dilutus
Sample ID: STANTEC ST
Start Date: 11/4/2014 End Date: 11/14/2014

Test ID: 2290cdref
Protocol: EPA 600/R-99/064
Sample Type:
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0	Day 4	Day 10	Day 10	Day 20	Day 20	# pupae + Mi	Alive in Sedi	Remain in Se	Emerged	Weight pan/c	Weight ashed pan/orgs aft
	1	1	1031-10222	10		10	10			0	0	0		0.86313	0.85236
	2	2	1031-10222	10		10	10			0	0	0		0.86257	0.85458
	3	3	1031-10222	10		10	10			0	0	0		0.87231	0.86306
	4	4	1031-10222	10		7	7			0	0	0		0.86542	0.85761
	5	5	1031-10222	10		8	8			0	0	0		0.85471	0.84783
	6	6	1031-10222	10		10	10			0	0	0		0.85915	0.85016
	7	7	1031-10222	10		9	9			0	0	0		0.85503	0.84762
	8	8	1031-10222	10		10	10			0	0	0		0.85846	0.84965
	9	1	1041-10254	10		10	10			0	0	0		0.88022	0.87295
	10	2	1041-10254	10		8	8			0	0	0		0.87299	0.86551
	11	3	1041-10254	10		10	10			0	0	0		0.87704	0.86983
	12	4	1041-10254	10		10	10			0	0	0		0.86276	0.85498
	13	5	1041-10254	10		9	9			0	0	0		0.86483	0.8567
	14	6	1041-10254	10		10	10			0	0	0		0.86595	0.85925
	15	7	1041-10254	10		10	10			0	0	0		0.8974	0.88926
	16	8	1041-10254	10		10	10			0	0	0		0.89364	0.88441
	17	1	10207	10		7	7			0	0	0		0.85112	0.84542
	18	2	10207	10		9	9			0	0	0		0.85306	0.8452
	19	3	10207	10		9	9			0	0	0		0.8592	0.85243
	20	4	10207	10		6	6			0	0	0		0.84718	0.8424
	21	5	10207	10		9	9			0	0	0		0.85366	0.84585
	22	6	10207	10		10	10			0	0	0		0.8553	0.84833
	23	7	10207	10		7	7			0	0	0		0.84569	0.83989
	24	8	10207	10		10	10			0	0	0		0.85785	0.85037
	25	1	10208	10		9	9			0	0	0		0.85594	0.84777
	26	2	10208	10		9	9			0	0	0		0.86441	0.85618
	27	3	10208	10		9	9			0	0	0		0.86158	0.85286
	28	4	10208	10		7	7			0	0	0		0.84778	0.84006
	29	5	10208	10		10	10			0	0	0		0.86258	0.85368
	30	6	10208	10		9	9			0	0	0		0.86594	0.85844
	31	7	10208	10		8	8			0	0	0		0.8669	0.85933
	32	8	10208	10		9	9			0	0	0		0.86753	0.8583
	33	1	10209	10		9	9			0	0	0		0.85629	0.8494
	34	2	10209	10		10	10			0	0	0		0.86044	0.85369
	35	3	10209	10		10	10			0	0	0		0.87587	0.86769
	36	4	10209	10		9	9			0	0	0		0.86356	0.85581
	37	5	10209	10		10	10			0	0	0		0.86779	0.85865
	38	6	10209	10		10	10			0	0	0		0.86526	0.85811

ToxCalc 5.0

Reviewed by: MLV

Test: EPA 100.2-Chironomus dilutus 10d Survival and Growth Test Test ID: 2290cdref
Species: CDIL-Chironomus dilutus Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST Sample Type:
Start Date: 11/4/2014 End Date: 11/14/2014 Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0	Day 4	Day 10	Day 10	Day 20	Day 20	# pupae + M	Alive in Sedi	Remain in Se	Emerged	Weight pan/c	Weight ashed pan/orgs aft
	39	7	10209	10		9	9			0	0	0		0.87086	0.86559
	40	8	10209	10		10	10			0	0	0		0.86194	0.85446
	41	1	10210	10		9	9			0	0	0		0.85554	0.84627
	42	2	10210	10		8	8			0	0	0		0.86517	0.85899
	43	3	10210	10		10	10			0	0	0		0.85937	0.85158
	44	4	10210	10		10	10			0	0	0		0.85706	0.84896
	45	5	10210	10		8	8			0	0	0		0.86344	0.8561
	46	6	10210	10		9	9			0	0	0		0.869	0.86152
	47	7	10210	10		10	10			0	0	0		0.85363	0.8455
	48	8	10210	10		8	8			0	0	0		0.86687	0.85869
	49	1	10212	10		10	10			0	0	0		0.85556	0.84494
	50	2	10212	10		9	9			0	0	0		0.86135	0.85264
	51	3	10212	10		10	10			0	0	0		0.85821	0.84857
	52	4	10212	10		10	10			0	0	0		0.84851	0.83901
	53	5	10212	10		10	10			0	0	0		0.86478	0.8558
	54	6	10212	10		10	10			0	0	0		0.856	0.84714
	55	7	10212	10		10	10			0	0	0		0.85726	0.84834
	56	8	10212	10		10	10			0	0	0		0.85185	0.8433
	57	1	10213	10		10	10			0	0	0		0.85671	0.84656
	58	2	10213	10		10	10			0	0	0		0.85916	0.84892
	59	3	10213	10		9	9			0	0	0		0.85592	0.8467
	60	4	10213	10		8	8			0	0	0		0.85664	0.84775
	61	5	10213	10		9	9			0	0	0		0.84999	0.84044
	62	6	10213	10		8	8			0	0	0		0.85003	0.84158
	63	7	10213	10		10	10			0	0	0		0.86381	0.8553
	64	8	10213	10		10	10			0	0	0		0.86377	0.85266
	65	1	10214	10		10	10			0	0	0		0.86172	0.85306
	66	2	10214	10		10	10			0	0	0		0.86294	0.85436
	67	3	10214	10		9	9			0	0	0		0.8514	0.84349
	68	4	10214	10		9	9			0	0	0		0.85898	0.85045
	69	5	10214	10		10	10			0	0	0		0.85987	0.85095
	70	6	10214	10		8	8			0	0	0		0.85126	0.84436
	71	7	10214	10		9	9			0	0	0		0.85749	0.84946
	72	8	10214	10		10	10			0	0	0		0.86257	0.8537
	73	1	10215	10		8	8			0	0	0		0.85631	0.84968
	74	2	10215	10		8	8			0	0	0		0.86232	0.85516
	75	3	10215	10		8	8			0	0	0		0.85601	0.84899
	76	4	10215	10		8	8			0	0	0		0.86229	0.85462

ToxCalc 5.0

Reviewed by: ML

Test: EPA 100.2-Chironomus dilutus 10d Survival and Growth Test
Species: CDIL-Chironomus dilutus
Sample ID: STANTEC ST
Start Date: 11/4/2014 End Date: 11/14/2014

Test ID: 2290cdref
Protocol: EPA 600/R-99/064
Sample Type:
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0	Day 4	Day 10	Day 10	Day 20	Day 20	# pupae + Mi	Alive in Sedi	Remain in Se	Emerged	Weight pan/c	Weight ashed pan/orgs aft
	77	5	10215	10		10	10			0	0	0		0.86489	0.85585
	78	6	10215	10		8	8			0	0	0		0.86799	0.85848
	79	7	10215	10		8	8			0	0	0		0.85619	0.84772
	80	8	10215	10		10	10			0	0	0		0.85615	0.84683
	81	1	10216	10		10	10			0	0	0		0.87882	0.87114
	82	2	10216	10		9	9			0	0	0		0.8738	0.86533
	83	3	10216	10		10	10			0	0	0		0.8642	0.856
	84	4	10216	10		10	10			0	0	0		0.86988	0.8611
	85	5	10216	10		9	9			0	0	0		0.86457	0.85641
	86	6	10216	10		10	10			0	0	0		0.87154	0.86155
	87	7	10216	10		10	10			0	0	0		0.88574	0.87601
	88	8	10216	10		9	9			0	0	0		0.86761	0.85983
	89	1	10217	10		8	8			0	0	0		0.86414	0.85511
	90	2	10217	10		5	5			0	0	0		0.87301	0.86477
	91	3	10217	10		8	8			0	0	0		0.86535	0.85813
	92	4	10217	10		7	7			0	0	0		0.85144	0.8448
	93	5	10217	10		9	9			0	0	0		0.864	0.85634
	94	6	10217	10		7	7			0	0	0		0.84373	0.83749
	95	7	10217	10		8	8			0	0	0		0.8621	0.8544
	96	8	10217	10		7	7			0	0	0		0.86888	0.86064
	97	1	10218	10		8	8			0	0	0		0.87506	0.86344
	98	2	10218	10		10	10			0	0	0		0.87953	0.86991
	99	3	10218	10		8	8			0	0	0		0.86698	0.85905
	100	4	10218	10		8	8			0	0	0		0.87788	0.87
	101	5	10218	10		10	10			0	0	0		0.88446	0.87522
	102	6	10218	10		10	10			0	0	0		0.87284	0.86132
	103	7	10218	10		10	10			0	0	0		0.87994	0.87024
	104	8	10218	10		10	10			0	0	0		0.87511	0.86432
	105	1	10219	10		7	7			0	0	0		0.87196	0.86247
	106	2	10219	10		9	9			0	0	0		0.88946	0.88051
	107	3	10219	10		6	6			0	0	0		0.86426	0.8579
	108	4	10219	10		10	10			0	0	0		0.8844	0.87375
	109	5	10219	10		10	10			0	0	0		0.8696	0.86132
	110	6	10219	10		7	7			0	0	0		0.87167	0.86231
	111	7	10219	10		10	10			0	0	0		0.86495	0.85477
	112	8	10219	10		10	10			0	0	0		0.8742	0.86451
	113	1	10220	10		10	10			0	0	0		0.85936	0.84952
	114	2	10220	10		10	10			0	0	0		0.86204	0.85299

ToxCalc 5.0

Reviewed by: MLV

Test: EPA 100.2-Chironomus dilutus 10d Survival and Growth Test
Species: CDIL-Chironomus dilutus
Sample ID: STANTEC ST
Start Date: 11/4/2014 End Date: 11/14/2014

Test ID: 2290cdref
Protocol: EPA 600/R-99/064
Sample Type:
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0	Day 4	Day 10	Day 10	Day 20	Day 20	# pupae + M	Alive in Sedi	Remain in Se	Emerged	Weight pan/c	Weight ashed pan/orgs aft
	115	3	10220	10		10	10			0	0	0		0.86198	0.85165
	116	4	10220	10		8	8			0	0	0		0.85724	0.84896
	117	5	10220	10		9	9			0	0	0		0.85694	0.8482
	118	6	10220	10		9	9			0	0	0		0.85886	0.85
	119	7	10220	10		10	10			0	0	0		0.85284	0.84492
	120	8	10220	10		10	10			0	0	0		0.86144	0.85099
	121	1	10221	10		10	10			0	0	0		0.86613	0.85788
	122	2	10221	10		6	6			0	0	0		0.8476	0.8418
	123	3	10221	10		9	9			0	0	0		0.86197	0.85408
	124	4	10221	10		8	8			0	0	0		0.85826	0.84968
	125	5	10221	10		10	10			0	0	0		0.85761	0.84838
	126	6	10221	10		9	9			0	0	0		0.86649	0.85881
	127	7	10221	10		8	8			0	0	0		0.85035	0.84342
	128	8	10221	10		9	9			0	0	0		0.85649	0.84893
	129	1	10223	10		10	10			0	0	0		0.85275	0.84371
	130	2	10223	10		9	9			0	0	0		0.8654	0.8566
	131	3	10223	10		9	9			0	0	0		0.85481	0.84571
	132	4	10223	10		10	10			0	0	0		0.85882	0.84982
	133	5	10223	10		7	7			0	0	0		0.86857	0.85974
	134	6	10223	10		9	9			0	0	0		0.86869	0.85977
	135	7	10223	10		9	9			0	0	0		0.87089	0.86197
	136	8	10223	10		10	10			0	0	0		0.8624	0.85175
	137	1	10224	10		10	10			0	0	0		0.86586	0.85691
	138	2	10224	10		8	8			0	0	0		0.86032	0.85263
	139	3	10224	10		8	8			0	0	0		0.86255	0.85603
	140	4	10224	10		8	8			0	0	0		0.86294	0.85452
	141	5	10224	10		9	9			0	0	0		0.85183	0.84417
	142	6	10224	10		9	9			0	0	0		0.86714	0.85876
	143	7	10224	10		9	9			0	0	0		0.85368	0.84576
	144	8	10224	10		10	10			0	0	0		0.86122	0.85257
	145	1	10225	10		9	9			0	0	0		0.8687	0.85896
	146	2	10225	10		10	10			0	0	0		0.85929	0.85301
	147	3	10225	10		10	10			0	0	0		0.85466	0.84636
	148	4	10225	10		10	10			0	0	0		0.8718	0.86324
	149	5	10225	10		8	8			0	0	0		0.86405	0.85532
	150	6	10225	10		7	7			0	0	0		0.86279	0.85436
	151	7	10225	10		8	8			0	0	0		0.85905	0.8522
	152	8	10225	10		8	8			0	0	0		0.854	0.847

ToxCalc 5.0

Reviewed by: MLV

Test: EPA 100.2-Chironomus dilutus 10d Survival and Growth Test
Test ID: 2290cdref
Species: CDIL-Chironomus dilutus
Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST
Sample Type:
Start Date: 11/4/2014 End Date: 11/14/2014
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0	Day 4	Day 1(	Day 1(	Day 2(	Day 2(	# pupae + Mi	Alive in Sedi	Remain in Se	Emerged	Weight pan/c	Weight ashed pan/orgs aft
	153	1	10226	10		8	8			0	0	0		0.85636	0.84893
	154	2	10226	10		9	9			0	0	0		0.88658	0.87875
	155	3	10226	10		8	8			0	0	0		0.87962	0.87308
	156	4	10226	10		7	7			0	0	0		0.87877	0.87203
	157	5	10226	10		7	7			0	0	0		0.87344	0.86888
	158	6	10226	10		9	9			0	0	0		0.88311	0.87524
	159	7	10226	10		7	7			0	0	0		0.87778	0.87191
	160	8	10226	10		8	8			0	0	0		0.85606	0.84775
	161	1	10256	10		9	9			0	0	0		0.84905	0.83964
	162	2	10256	10		7	7			0	0	0		0.85468	0.84862
	163	3	10256	10		8	8			0	0	0		0.86346	0.85597
	164	4	10256	10		5	5			0	0	0		0.84767	0.84406
	165	5	10256	10		9	9			0	0	0		0.85849	0.85034
	166	6	10256	10		8	8			0	0	0		0.86938	0.85837
	167	7	10256	10		10	10			0	0	0		0.86452	0.85551
	168	8	10256	10		10	10			0	0	0		0.86495	0.85462

Comments: Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207

ToxCalc 5.0

Reviewed by: MLV

Chironomus dilutus 10d Survival and Growth Test-10-day survival

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0000	1.0000	1.0000	0.7000	0.8000	1.0000	0.9000	1.0000
1041-10254	1.0000	0.8000	1.0000	1.0000	0.9000	1.0000	1.0000	1.0000
10207	0.7000	0.9000	0.9000	0.6000	0.9000	1.0000	0.7000	1.0000
10208	0.9000	0.9000	0.9000	0.7000	1.0000	0.9000	0.8000	0.9000
10209	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000
10210	0.9000	0.8000	1.0000	1.0000	0.8000	0.9000	1.0000	0.8000
10212	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10213	1.0000	1.0000	0.9000	0.8000	0.9000	0.8000	1.0000	1.0000
10214	1.0000	1.0000	0.9000	0.9000	1.0000	0.8000	0.9000	1.0000
10215	0.8000	0.8000	0.8000	0.8000	1.0000	0.8000	0.8000	1.0000
10216	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
10217	0.8000	0.5000	0.8000	0.7000	0.9000	0.7000	0.8000	0.7000
10218	0.8000	1.0000	0.8000	0.8000	1.0000	1.0000	1.0000	1.0000
10219	0.7000	0.9000	0.6000	1.0000	1.0000	0.7000	1.0000	1.0000
10220	1.0000	1.0000	1.0000	0.8000	0.9000	0.9000	1.0000	1.0000
10221	1.0000	0.6000	0.9000	0.8000	1.0000	0.9000	0.8000	0.9000
10223	1.0000	0.9000	0.9000	1.0000	0.7000	0.9000	0.9000	1.0000
10224	1.0000	0.8000	0.8000	0.8000	0.9000	0.9000	0.9000	1.0000
10225	0.9000	1.0000	1.0000	1.0000	0.8000	0.7000	0.8000	0.8000
10226	0.8000	0.9000	0.8000	0.7000	0.7000	0.9000	0.7000	0.8000
10256	0.9000	0.7000	0.8000	0.5000	0.9000	0.8000	1.0000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9250	0.9610	1.3009	0.9912	1.4120	12.925	8	*		
1041-10254	0.9625	1.0000	1.3535	1.1071	1.4120	8.476	8			
10207	0.8375	0.8701	1.1799	0.8861	1.4120	16.940	8	1.310	1.761	0.1627
10208	0.8750	0.9091	1.2194	0.9912	1.4120	10.100	8	1.106	1.761	0.1298
10209	0.9625	1.0000	1.3509	1.2490	1.4120	6.244	8	-0.751	1.761	0.1171
10210	0.9000	0.9351	1.2569	1.1071	1.4120	11.234	8	0.567	1.761	0.1367
10212	0.9875	1.0260	1.3916	1.2490	1.4120	4.140	8	-1.444	1.761	0.1107
10213	0.9250	0.9610	1.2951	1.1071	1.4120	10.505	8	0.077	1.761	0.1347
10214	0.9375	0.9740	1.3128	1.1071	1.4120	8.821	8	-0.164	1.761	0.1271
10215	0.8500	0.8831	1.1834	1.1071	1.4120	11.926	8	1.515	1.761	0.1367
10216	0.9625	1.0000	1.3509	1.2490	1.4120	6.244	8	-0.751	1.761	0.1171
*10217	0.7375	0.7662	1.0412	0.7854	1.2490	13.048	8	3.399	1.761	0.1346
10218	0.9250	0.9610	1.2977	1.1071	1.4120	12.159	8	0.040	1.761	0.1436
10219	0.8625	0.8961	1.2207	0.8861	1.4120	18.695	8	0.801	1.761	0.1765
10220	0.9500	0.9870	1.3332	1.1071	1.4120	8.799	8	-0.445	1.761	0.1277
10221	0.8625	0.8961	1.2089	0.8861	1.4120	14.404	8	1.075	1.761	0.1507
10223	0.9125	0.9481	1.2779	0.9912	1.4120	11.047	8	0.296	1.761	0.1367
10224	0.8875	0.9221	1.2366	1.1071	1.4120	10.242	8	0.865	1.761	0.1311
10225	0.8750	0.9091	1.2247	0.9912	1.4120	13.865	8	0.902	1.761	0.1488
*10226	0.7875	0.8182	1.0991	0.9912	1.2490	9.733	8	2.864	1.761	0.1241
10256	0.8250	0.8571	1.1641	0.7854	1.4120	18.285	8	1.426	1.761	0.1689

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.21774	1.035	-0.3978	-0.4207
Bartlett's Test indicates equal variances (p = 0.18)	24.4581	30.1435		
The control means are not significantly different (p = 0.48)	0.73098	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences Treatments vs 1031-10222	0.10941	0.11778	0.06158	0.02169	2.3E-04	19, 140

ToxCalc v5.0.32

Reviewed by: ML✓

Chironomus dilutus 10d Survival and Growth Test-10-Day Growth (AFDW)

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0770	0.7990	0.9250	1.1157	0.8600	0.8990	0.8233	0.8810
1041-10254	0.7270	0.9350	0.7210	0.7780	0.9033	0.6700	0.8140	0.9230
10207	0.8143	0.8733	0.7522	0.7967	0.8678	0.6970	0.8286	0.7480
10208	0.9078	0.9144	0.9689	1.1029	0.8900	0.8333	0.9462	1.0256
10209	0.7656	0.6750	0.8180	0.8611	0.9140	0.7150	0.5856	0.7480
10210	1.0300	0.7725	0.7790	0.8100	0.9175	0.8311	0.8130	1.0225
10212	1.0620	0.9678	0.9640	0.9500	0.8980	0.8860	0.8920	0.8550
10213	1.0150	1.0240	1.0244	1.1112	1.0611	1.0562	0.8510	1.1110
10214	0.8660	0.8580	0.8789	0.9478	0.8920	0.8625	0.8922	0.8870
10215	0.8288	0.8950	0.8775	0.9587	0.9040	1.1888	1.0588	0.9320
10216	0.7680	0.9411	0.8200	0.8780	0.9067	0.9990	0.9730	0.8644
10217	1.1288	1.6480	0.9025	0.9486	0.8511	0.8914	0.9625	1.1771
10218	1.4525	0.9620	0.9912	0.9850	0.9240	1.1520	0.9700	1.0790
10219	1.3557	0.9944	1.0600	1.0650	0.8280	1.3371	1.0180	0.9690
10220	0.9840	0.9050	1.0330	1.0350	0.9711	0.9844	0.7920	1.0450
10221	0.8250	0.9667	0.8767	1.0725	0.9230	0.8533	0.8663	0.8400
10223	0.9040	0.9778	1.0111	0.9000	1.2614	0.9911	0.9911	1.0650
10224	0.8950	0.9612	0.8150	1.0525	0.8511	0.9311	0.8800	0.8650
10225	1.0822	0.6280	0.8300	0.8560	1.0913	1.2043	0.8563	0.8750
10226	0.9288	0.8700	0.8175	0.9629	0.6514	0.8744	0.8386	1.0388
10256	1.0456	0.8657	0.9363	0.7220	0.9056	1.3763	0.9010	1.0330

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9225	1.1404	0.9225	0.7990	1.1157	12.459	8	*		
1041-10254	0.8089	1.0000	0.8089	0.6700	0.9350	12.585	8			
*10207	0.7972	0.9856	0.7972	0.6970	0.8733	7.723	8	2.717	1.812	0.0836
10208	0.9486	1.1727	0.9486	0.8333	1.1029	8.881	8	-0.519	1.782	0.0898
*10209	0.7603	0.9399	0.7603	0.5856	0.9140	13.809	8	2.948	1.771	0.0975
10210	0.8720	1.0779	0.8720	0.7725	1.0300	12.046	8	0.918	1.771	0.0975
10212	0.9343	1.1551	0.9343	0.8550	1.0620	7.040	8	-0.253	1.796	0.0841
10213	1.0318	1.2755	1.0318	0.8510	1.1112	7.953	8	-2.188	1.782	0.0890
10214	0.8855	1.0947	0.8855	0.8580	0.9478	3.216	8	0.883	1.895	0.0793
10215	0.9554	1.1811	0.9554	0.8288	1.1888	12.135	8	-0.571	1.771	0.1022
10216	0.8938	1.1049	0.8938	0.7680	0.9990	8.680	8	0.586	1.782	0.0874
10217	1.0638	1.3150	1.0638	0.8511	1.6480	24.690	8	-1.393	1.833	0.1858
10218	1.0645	1.3159	1.0645	0.9240	1.4525	16.243	8	-1.934	1.782	0.1308
10219	1.0784	1.3332	1.0784	0.8280	1.3557	16.799	8	-2.055	1.796	0.1362
10220	0.9687	1.1975	0.9687	0.7920	1.0450	8.735	8	-0.915	1.782	0.0899
10221	0.9029	1.1162	0.9029	0.8250	1.0725	9.147	8	0.391	1.782	0.0892
10223	1.0127	1.2519	1.0127	0.9000	1.2614	11.276	8	-1.574	1.771	0.1014
10224	0.9064	1.1205	0.9064	0.8150	1.0525	8.226	8	0.333	1.782	0.0863
10225	0.9279	1.1471	0.9279	0.6280	1.2043	19.935	8	-0.070	1.796	0.1383
10226	0.8728	1.0790	0.8728	0.6514	1.0388	13.137	8	0.866	1.771	0.1017
10256	0.9732	1.2030	0.9732	0.7220	1.3763	19.692	8	-0.641	1.796	0.1419

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.37062	1.035	1.23114	4.11359
Bartlett's Test indicates unequal variances (p = 1.07E-05)	57.1822	30.1435		
The control means are not significantly different (p = 0.06)	2.09248	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.14188	0.1538	0.05717	0.01629	8.9E-06	19, 140
Treatments vs 1031-10222						

ToxCalc v5.0.32

Reviewed by: MLV

Chironomus dilutus 10d Survival and Growth Test-10-Day Biomass (AFDW)

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0770	0.7990	0.9250	0.7810	0.6880	0.8990	0.7410	0.8810
1041-10254	0.7270	0.7480	0.7210	0.7780	0.8130	0.6700	0.8140	0.9230
10207	0.5700	0.7860	0.6770	0.4780	0.7810	0.6970	0.5800	0.7480
10208	0.8170	0.8230	0.8720	0.7720	0.8900	0.7500	0.7570	0.9230
10209	0.6890	0.6750	0.8180	0.7750	0.9140	0.7150	0.5270	0.7480
10210	0.9270	0.6180	0.7790	0.8100	0.7340	0.7480	0.8130	0.8180
10212	1.0620	0.8710	0.9640	0.9500	0.8980	0.8860	0.8920	0.8550
10213	1.0150	1.0240	0.9220	0.8890	0.9550	0.8450	0.8510	1.1110
10214	0.8660	0.8580	0.7910	0.8530	0.8920	0.6900	0.8030	0.8870
10215	0.6630	0.7160	0.7020	0.7670	0.9040	0.9510	0.8470	0.9320
10216	0.7680	0.8470	0.8200	0.8780	0.8160	0.9990	0.9730	0.7780
10217	0.9030	0.8240	0.7220	0.6640	0.7660	0.6240	0.7700	0.8240
10218	1.1620	0.9620	0.7930	0.7880	0.9240	1.1520	0.9700	1.0790
10219	0.9490	0.8950	0.6360	1.0650	0.8280	0.9360	1.0180	0.9690
10220	0.9840	0.9050	1.0330	0.8280	0.8740	0.8860	0.7920	1.0450
10221	0.8250	0.5800	0.7890	0.8580	0.9230	0.7680	0.6930	0.7560
10223	0.9040	0.8800	0.9100	0.9000	0.8830	0.8920	0.8920	1.0650
10224	0.8950	0.7690	0.6520	0.8420	0.7660	0.8380	0.7920	0.8650
10225	0.9740	0.6280	0.8300	0.8560	0.8730	0.8430	0.6850	0.7000
10226	0.7430	0.7830	0.6540	0.6740	0.4560	0.7870	0.5870	0.8310
10256	0.9410	0.6060	0.7490	0.3610	0.8150	1.1010	0.9010	1.0330

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.8489	1.0964	0.8489	0.6880	1.0770	14.496	8	*		
1041-10254	0.7743	1.0000	0.7743	0.6700	0.9230	9.986	8			
*10207	0.6646	0.8584	0.6646	0.4780	0.7860	16.810	8	3.136	1.771	0.1041
10208	0.8255	1.0662	0.8255	0.7500	0.9230	7.819	8	0.476	1.812	0.0890
*10209	0.7326	0.9462	0.7326	0.5270	0.9140	15.480	8	1.965	1.771	0.1048
10210	0.7809	1.0086	0.7809	0.6180	0.9270	11.292	8	1.271	1.782	0.0954
10212	0.9222	1.1912	0.9222	0.8550	1.0620	7.332	8	-1.478	1.812	0.0900
10213	0.9515	1.2289	0.9515	0.8450	1.1110	9.808	8	-1.880	1.771	0.0967
10214	0.8300	1.0720	0.8300	0.6900	0.8920	8.089	8	0.381	1.812	0.0898
10215	0.8103	1.0465	0.8103	0.6630	0.9510	13.911	8	0.655	1.771	0.1045
10216	0.8599	1.1106	0.8599	0.7680	0.9990	9.956	8	-0.208	1.782	0.0945
10217	0.7621	0.9843	0.7621	0.6240	0.9030	11.933	8	1.604	1.782	0.0964
10218	0.9788	1.2641	0.9788	0.7880	1.1620	14.851	8	-1.929	1.771	0.1192
10219	0.9120	1.1779	0.9120	0.6360	1.0650	14.556	8	-0.986	1.771	0.1133
10220	0.9184	1.1861	0.9184	0.7920	1.0450	10.149	8	-1.273	1.771	0.0967
10221	0.7740	0.9997	0.7740	0.5800	0.9230	13.519	8	1.311	1.771	0.1011
10223	0.9158	1.1828	0.9158	0.8800	1.0650	6.677	8	-1.377	1.812	0.0881
10224	0.8024	1.0363	0.8024	0.6520	0.8950	9.480	8	0.909	1.796	0.0919
10225	0.7986	1.0315	0.7986	0.6280	0.9740	14.532	8	0.840	1.771	0.1059
*10226	0.6894	0.8904	0.6894	0.4560	0.8310	17.990	8	2.582	1.771	0.1094
10256	0.8134	1.0505	0.8134	0.3610	1.1010	29.635	8	0.371	1.812	0.1734

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.71079	1.035	-0.4902	1.58411
Bartlett's Test indicates unequal variances (p = 0.04)	31.5206	30.1435		
The control means are not significantly different (p = 0.17)	1.45239	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences Treatments vs 1031-10222	0.17343	0.2043	0.05799	0.01267	5.1E-08	19, 140

ToxCalc v5.0.32

Reviewed by: MLV

Appendix C3
Chironomus dilutus
10-Day Statistical Data
Reference Sediment SS-1041-AT

- Survival
- Weight

Chironomus dilutus 10d Survival and Growth Test-10-day survival

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0000	1.0000	1.0000	0.7000	0.8000	1.0000	0.9000	1.0000
1041-10254	1.0000	0.8000	1.0000	1.0000	0.9000	1.0000	1.0000	1.0000
10207	0.7000	0.9000	0.9000	0.6000	0.9000	1.0000	0.7000	1.0000
10208	0.9000	0.9000	0.9000	0.7000	1.0000	0.9000	0.8000	0.9000
10209	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000
10210	0.9000	0.8000	1.0000	1.0000	0.8000	0.9000	1.0000	0.8000
10212	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10213	1.0000	1.0000	0.9000	0.8000	0.9000	0.8000	1.0000	1.0000
10214	1.0000	1.0000	0.9000	0.9000	1.0000	0.8000	0.9000	1.0000
10215	0.8000	0.8000	0.8000	0.8000	1.0000	0.8000	0.8000	1.0000
10216	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
10217	0.8000	0.5000	0.8000	0.7000	0.9000	0.7000	0.8000	0.7000
10218	0.8000	1.0000	0.8000	0.8000	1.0000	1.0000	1.0000	1.0000
10219	0.7000	0.9000	0.6000	1.0000	1.0000	0.7000	1.0000	1.0000
10220	1.0000	1.0000	1.0000	0.8000	0.9000	0.9000	1.0000	1.0000
10221	1.0000	0.6000	0.9000	0.8000	1.0000	0.9000	0.8000	0.9000
10223	1.0000	0.9000	0.9000	1.0000	0.7000	0.9000	0.9000	1.0000
10224	1.0000	0.8000	0.8000	0.8000	0.9000	0.9000	0.9000	1.0000
10225	0.9000	1.0000	1.0000	1.0000	0.8000	0.7000	0.8000	0.8000
10226	0.8000	0.9000	0.8000	0.7000	0.7000	0.9000	0.7000	0.8000
10256	0.9000	0.7000	0.8000	0.5000	0.9000	0.8000	1.0000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9250	0.9610	1.3009	0.9912	1.4120	12.925	8			
1041-10254	0.9625	1.0000	1.3535	1.1071	1.4120	8.476	8	*		
*10207	0.8375	0.8701	1.1799	0.8861	1.4120	16.940	8	2.130	1.761	0.1435
*10208	0.8750	0.9091	1.2194	0.9912	1.4120	10.100	8	2.253	1.761	0.1048
10209	0.9625	1.0000	1.3509	1.2490	1.4120	6.244	8	0.052	1.761	0.0887
10210	0.9000	0.9351	1.2569	1.1071	1.4120	11.234	8	1.502	1.761	0.1133
10212	0.9875	1.0260	1.3916	1.2490	1.4120	4.140	8	-0.840	1.761	0.0799
10213	0.9250	0.9610	1.2951	1.1071	1.4120	10.505	8	0.929	1.761	0.1108
10214	0.9375	0.9740	1.3128	1.1071	1.4120	8.821	8	0.707	1.761	0.1015
*10215	0.8500	0.8831	1.1834	1.1071	1.4120	11.926	8	2.646	1.761	0.1133
10216	0.9625	1.0000	1.3509	1.2490	1.4120	6.244	8	0.052	1.761	0.0887
*10217	0.7375	0.7662	1.0412	0.7854	1.2490	13.048	8	4.969	1.761	0.1107
10218	0.9250	0.9610	1.2977	1.1071	1.4120	12.159	8	0.810	1.761	0.1215
10219	0.8625	0.8961	1.2207	0.8861	1.4120	18.695	8	1.471	1.761	0.1591
10220	0.9500	0.9870	1.3332	1.1071	1.4120	8.799	8	0.351	1.761	0.1022
*10221	0.8625	0.8961	1.2089	0.8861	1.4120	14.404	8	1.961	1.761	0.1299
10223	0.9125	0.9481	1.2779	0.9912	1.4120	11.047	8	1.176	1.761	0.1133
*10224	0.8875	0.9221	1.2366	1.1071	1.4120	10.242	8	1.936	1.761	0.1064
*10225	0.8750	0.9091	1.2247	0.9912	1.4120	13.865	8	1.778	1.761	0.1276
*10226	0.7875	0.8182	1.0991	0.9912	1.2490	9.733	8	4.587	1.761	0.0977
*10256	0.8250	0.8571	1.1641	0.7854	1.4120	18.285	8	2.216	1.761	0.1506

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.25234	1.035	-0.3804	-0.3714
Bartlett's Test indicates equal variances (p = 0.17)	24.8277	30.1435		
The control means are not significantly different (p = 0.48)	0.73098	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.08285	0.08689	0.06507	0.02093	6.3E-05	19, 140
Treatments vs 1041-10254						

ToxCalc v5.0.32

Reviewed by: MLV

Chironomus dilutus 10d Survival and Growth Test-10-Day Growth (AFDW)

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0770	0.7990	0.9250	1.1157	0.8600	0.8990	0.8233	0.8810
1041-10254	0.7270	0.9350	0.7210	0.7780	0.9033	0.6700	0.8140	0.9230
10207	0.8143	0.8733	0.7522	0.7967	0.8678	0.6970	0.8286	0.7480
10208	0.9078	0.9144	0.9689	1.1029	0.8900	0.8333	0.9462	1.0256
10209	0.7656	0.6750	0.8180	0.8611	0.9140	0.7150	0.5856	0.7480
10210	1.0300	0.7725	0.7790	0.8100	0.9175	0.8311	0.8130	1.0225
10212	1.0620	0.9678	0.9640	0.9500	0.8980	0.8860	0.8920	0.8550
10213	1.0150	1.0240	1.0244	1.1112	1.0611	1.0562	0.8510	1.1110
10214	0.8660	0.8580	0.8789	0.9478	0.8920	0.8625	0.8922	0.8870
10215	0.8288	0.8950	0.8775	0.9587	0.9040	1.1888	1.0588	0.9320
10216	0.7680	0.9411	0.8200	0.8780	0.9067	0.9990	0.9730	0.8644
10217	1.1288	1.6480	0.9025	0.9486	0.8511	0.8914	0.9625	1.1771
10218	1.4525	0.9620	0.9912	0.9850	0.9240	1.1520	0.9700	1.0790
10219	1.3557	0.9944	1.0600	1.0650	0.8280	1.3371	1.0180	0.9690
10220	0.9840	0.9050	1.0330	1.0350	0.9711	0.9844	0.7920	1.0450
10221	0.8250	0.9667	0.8767	1.0725	0.9230	0.8533	0.8663	0.8400
10223	0.9040	0.9778	1.0111	0.9000	1.2614	0.9911	0.9911	1.0650
10224	0.8950	0.9612	0.8150	1.0525	0.8511	0.9311	0.8800	0.8650
10225	1.0822	0.6280	0.8300	0.8560	1.0913	1.2043	0.8563	0.8750
10226	0.9288	0.8700	0.8175	0.9629	0.6514	0.8744	0.8386	1.0388
10256	1.0456	0.8657	0.9363	0.7220	0.9056	1.3763	0.9010	1.0330

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9225	1.1404	0.9225	0.7990	1.1157	12.459	8			
1041-10254	0.8089	1.0000	0.8089	0.6700	0.9350	12.585	8	*		
10207	0.7972	0.9856	0.7972	0.6970	0.8733	7.723	8	0.278	1.796	0.0755
10208	0.9486	1.1727	0.9486	0.8333	1.1029	8.881	8	-2.991	1.771	0.0827
10209	0.7603	0.9399	0.7603	0.5856	0.9140	13.809	8	0.941	1.771	0.0916
10210	0.8720	1.0779	0.8720	0.7725	1.0300	12.046	8	-1.219	1.771	0.0916
10212	0.9343	1.1551	0.9343	0.8550	1.0620	7.040	8	-2.927	1.796	0.0770
10213	1.0318	1.2755	1.0318	0.8510	1.1112	7.953	8	-4.820	1.771	0.0819
10214	0.8855	1.0947	0.8855	0.8580	0.9478	3.216	8	-2.050	1.860	0.0695
10215	0.9554	1.1811	0.9554	0.8288	1.1888	12.135	8	-2.686	1.771	0.0966
10216	0.8938	1.1049	0.8938	0.7680	0.9990	8.680	8	-1.875	1.771	0.0801
10217	1.0638	1.3150	1.0638	0.8511	1.6480	24.690	8	-2.559	1.833	0.1826
10218	1.0645	1.3159	1.0645	0.9240	1.4525	16.243	8	-3.602	1.796	0.1274
10219	1.0784	1.3332	1.0784	0.8280	1.3557	16.799	8	-3.668	1.796	0.1319
10220	0.9687	1.1975	0.9687	0.7920	1.0450	8.735	8	-3.414	1.771	0.0829
10221	0.9029	1.1162	0.9029	0.8250	1.0725	9.147	8	-2.028	1.771	0.0821
10223	1.0127	1.2519	1.0127	0.9000	1.2614	11.276	8	-3.768	1.771	0.0958
10224	0.9064	1.1205	0.9064	0.8150	1.0525	8.226	8	-2.184	1.782	0.0795
10225	0.9279	1.1471	0.9279	0.6280	1.2043	19.935	8	-1.594	1.812	0.1353
10226	0.8728	1.0790	0.8728	0.6514	1.0388	13.137	8	-1.178	1.771	0.0960
10256	0.9732	1.2030	0.9732	0.7220	1.3763	19.692	8	-2.141	1.812	0.1391

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.28749	1.035	1.21995	4.19756
Bartlett's Test indicates unequal variances (p = 9.12E-06)	57.6302	30.1435		
The control means are not significantly different (p = 0.06)	2.09248	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.13905	0.1719	0.06388	0.01615	1.0E-06	19, 140
Treatments vs 1041-10254						

Chironomus dilutus 10d Survival and Growth Test-10-Day Biomass (AFDW)

Start Date:	11/4/2014	Test ID:	2290cdref	Sample ID:	STANTEC ST
End Date:	11/14/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	CDIL-Chironomus dilutus
Comments:	Stantec St. Louis 2014 10 dayC. dilutus survival and growth GLC 10207				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0770	0.7990	0.9250	0.7810	0.6880	0.8990	0.7410	0.8810
1041-10254	0.7270	0.7480	0.7210	0.7780	0.8130	0.6700	0.8140	0.9230
10207	0.5700	0.7860	0.6770	0.4780	0.7810	0.6970	0.5800	0.7480
10208	0.8170	0.8230	0.8720	0.7720	0.8900	0.7500	0.7570	0.9230
10209	0.6890	0.6750	0.8180	0.7750	0.9140	0.7150	0.5270	0.7480
10210	0.9270	0.6180	0.7790	0.8100	0.7340	0.7480	0.8130	0.8180
10212	1.0620	0.8710	0.9640	0.9500	0.8980	0.8860	0.8920	0.8550
10213	1.0150	1.0240	0.9220	0.8890	0.9550	0.8450	0.8510	1.1110
10214	0.8660	0.8580	0.7910	0.8530	0.8920	0.6900	0.8030	0.8870
10215	0.6630	0.7160	0.7020	0.7670	0.9040	0.9510	0.8470	0.9320
10216	0.7680	0.8470	0.8200	0.8780	0.8160	0.9990	0.9730	0.7780
10217	0.9030	0.8240	0.7220	0.6640	0.7660	0.6240	0.7700	0.8240
10218	1.1620	0.9620	0.7930	0.7880	0.9240	1.1520	0.9700	1.0790
10219	0.9490	0.8950	0.6360	1.0650	0.8280	0.9360	1.0180	0.9690
10220	0.9840	0.9050	1.0330	0.8280	0.8740	0.8860	0.7920	1.0450
10221	0.8250	0.5800	0.7890	0.8580	0.9230	0.7680	0.6930	0.7560
10223	0.9040	0.8800	0.9100	0.9000	0.8830	0.8920	0.8920	1.0650
10224	0.8950	0.7690	0.6520	0.8420	0.7660	0.8380	0.7920	0.8650
10225	0.9740	0.6280	0.8300	0.8560	0.8730	0.8430	0.6850	0.7000
10226	0.7430	0.7830	0.6540	0.6740	0.4560	0.7870	0.5870	0.8310
10256	0.9410	0.6060	0.7490	0.3610	0.8150	1.1010	0.9010	1.0330

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.8489	1.0964	0.8489	0.6880	1.0770	14.496	8			
1041-10254	0.7743	1.0000	0.7743	0.6700	0.9230	9.986	8	*		
*10207	0.6646	0.8584	0.6646	0.4780	0.7860	16.810	8	2.282	1.782	0.0856
10208	0.8255	1.0662	0.8255	0.7500	0.9230	7.819	8	-1.439	1.771	0.0631
10209	0.7326	0.9462	0.7326	0.5270	0.9140	15.480	8	0.858	1.782	0.0865
10210	0.7809	1.0086	0.7809	0.6180	0.9270	11.292	8	-0.160	1.771	0.0734
10212	0.9222	1.1912	0.9222	0.8550	1.0620	7.332	8	-4.075	1.771	0.0643
10213	0.9515	1.2289	0.9515	0.8450	1.1110	9.808	8	-4.137	1.771	0.0759
10214	0.8300	1.0720	0.8300	0.6900	0.8920	8.089	8	-1.540	1.771	0.0641
10215	0.8103	1.0465	0.8103	0.6630	0.9510	13.911	8	-0.745	1.782	0.0861
10216	0.8599	1.1106	0.8599	0.7680	0.9990	9.956	8	-2.099	1.771	0.0722
10217	0.7621	0.9843	0.7621	0.6240	0.9030	11.933	8	0.287	1.771	0.0747
10218	0.9788	1.2641	0.9788	0.7880	1.1620	14.851	8	-3.513	1.812	0.1055
10219	0.9120	1.1779	0.9120	0.6360	1.0650	14.556	8	-2.536	1.796	0.0975
10220	0.9184	1.1861	0.9184	0.7920	1.0450	10.149	8	-3.366	1.771	0.0758
10221	0.7740	0.9997	0.7740	0.5800	0.9230	13.519	8	0.005	1.782	0.0820
10223	0.9158	1.1828	0.9158	0.8800	1.0650	6.677	8	-4.060	1.771	0.0617
10224	0.8024	1.0363	0.8024	0.6520	0.8950	9.480	8	-0.733	1.771	0.0679
10225	0.7986	1.0315	0.7986	0.6280	0.9740	14.532	8	-0.494	1.782	0.0879
10226	0.6894	0.8904	0.6894	0.4560	0.8310	17.990	8	1.643	1.796	0.0928
10256	0.8134	1.0505	0.8134	0.3610	1.1010	29.635	8	-0.437	1.860	0.1664

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.78537	1.035	-0.5443	1.77196
Bartlett's Test indicates unequal variances (p = 0.03)	32.8048	30.1435		
The control means are not significantly different (p = 0.17)	1.45239	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences Treatments vs 1041-10254	0.16643	0.21496	0.059	0.01221	1.5E-08	19, 140

Appendix D1
Hyalella azteca
28-Day Bench sheets

- Survival
- Weight

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	124	Test Photoperiod:	16:8
Sample ID:	Laboratory Control	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	10/28-29/14 In House 7/8 day
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day:	28	Number Daily Renewals:	0
Date:	12/2/2014	☐ ——— renewal time/Initials	~~☐ renewal~~
Overlying Water:	Dechlor	~~☐ renewal time/Initials~~	~~☐ renewal~~
Overlying Water Batch ID (GLC Number):	NA	Food: ~~YTC#~~	~~☐ Feed 1.0 ml/replicate~~
☒ 0539 MW chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.6	7.74	6.0	321	132	106	0.11 J	10 /10
2	22.6	7.73	6.3	323	end: 3.3	end: 5.3		10 /10
3					start: 0.0	start: 0.0		10 /10
4					Titrant used (mL): 3.3	Titrant used (mL): 5.3		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								10 /10
7								10 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits: 30 MW 12/3/14
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLW

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number: 2290-01	Project Name: Stantec St. Louis River		
GLC#: 10207		Test Photoperiod: 16:8	
Sample ID: SS 1022-AT		Test System: Sediment-100 mL and Overlying Water-175mL Manual Delivery	
Test Species: *Hyalella azteca*		Test Temperature: 23± 1°C	
Date Addition of Sediment: 11/3/2014		Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date: 11/4/2014		Test Termination Date: 12/2/2014	

Test Day: 28	Number Daily Renewals: 1
Date: 12/2/2014	☒ DJ 720 renewal time/Initials ~~☐ renewal~~
Overlying Water: Dechlor	~~☐ renewal time/Initials ☐ renewal~~
Overlying Water Batch ID (GLC Number): NA	Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~
☒ 539 MW chemistries time/Initial	Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.8	7.89	6.4	314	136	104	0.12 J	8 /10
2	22.8	7.88	6.8	314	end: 10.3	end: 15.5		10 /10
3					start: 6.9	start: 10.3		10 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.2		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								9 /10
7								10 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10208	Test Photoperiod:	16:8
Sample ID:	SS 1024-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 11/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ 539 nw chemistries time/Initial

Number Daily Renewals: 1
☒ 5 S 720 renewal time/Initials ☐ ~~renewal~~
☐ ~~renewal time/Initials~~ ☐ ~~renewal~~
Food: ~~YTC#~~ ☐ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: nw
1	22.6	7.82	7.0	311	136	106	0.13 J	10 /10
2	22.6	7.82	7.1	312	end: 13.7	end: 21.0		10 /10
3					start: 10.3	start: 15.7		9 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.3		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								9 /10
7								9 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLV
10/30 MGM

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10209	Test Photoperiod:	16:8
Sample ID:	SS 1032-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~X~~539 MMr chemistries time/Initial

Number Daily Renewals: 1
~~ADS~~ 720 renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~YTC#~~ ~~□ Feed 1.0 ml/replicate~~
Screens Cleaned: □ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MMr
1	22.6	8.01	7.2	314	136	102	0.14	9 /10
2	22.6	8.04	7.0	315	end: 17.2	end: 26.1		9 /10
3					start: 13.8	start: 21.0		9 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.1		10 /10
5					Sample volume (mL): 2.5	Sample volume (mL): 50		8 /10
6								9 /10
7								10 /10
8								8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10210	Test Photoperiod:	16:8
Sample ID:	SS 1021-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

~~0539 MLV~~ chemistries time/Initial

Number Daily Renewals: 1

~~0805~~ 720 renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: hwv
1	22.6	8.09	7.4	314	148	104	0.15 J	7 /10
2	22.7	8.12	7.3	314	end: 20.9	end: 31.3		10 /10
3					start: 17.2	start: 26.1		10 /10
4					Titrant used (mL): 3.7	Titrant used (mL): 5.2		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								8 /10
7								7 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10212	Test Photoperiod:	16:8
Sample ID:	SS 1026-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

☒ 539 MW chemistries time/Initial

Number Daily Renewals: 1

☒ DS 720 renewal time/Initials ~~☐ renewal~~

~~☐ renewal time/Initials ☐ renewal~~

Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MWS
1	22.6	8.10	7.4	329	148	108	0.13 J	8 /10
2	22.6	8.00	7.0	326	end: 24.6	end: 36.7		8 /10
3					start: 20.9	start: 31.3		8 /10
4					Titrant used (mL): 3.7	Titrant used (mL): 5.4		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								10 /10
7								9 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MW

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10213	Test Photoperiod:	16:8
Sample ID:	SS 1028-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~1~~ 5 MW chemistries time/Initial

Number Daily Renewals: 1
~~1~~ 5 720 renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.6	7.99	6.9	322 ~~7.99~~ MW 12/2/14	140	106	0.11 J	8 /10
2	22.6	8.01	6.7	324	end: 28.1	end: 42.0		9 /10
3					start: 24.6	start: 36.7		9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.3		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								9 /10
7								8 /10
8								8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

GLEC

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MW

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10214	Test Photoperiod:	16:8
Sample ID:	SS 1025-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
A539 NW chemistries time/Initial

Number Daily Renewals: 1
~~DS~~ 720 renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: NW
1	22.6	7.98	6.7	319	~~140~~ 136	~~106~~ 104	0.12 J	10 /10
2	22.6	8.06	6.9	324	DS 12/2/14 end: ~~28~~ 3.4	end: ~~42.0~~ 5.2		10 /10
3					start: ~~24.6~~ 0.0	start: ~~36.7~~ 0.0		8 /10
4					Titrant used (mL): ~~3.5~~ 3.4	Titrant used (mL): ~~5.3~~ 5.2		7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								7 /10
7								9 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10215	Test Photoperiod:	16:8
Sample ID:	SS 1010-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~X~~ 539 NW chemistries time/Initial

Number Daily Renewals: 1
~~☒~~ DS 720 renewal time/Initials ~~☐~~ ~~renewal~~
~~renewal time/Initials~~ ~~☐~~ ~~renewal~~
Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: NW
1	22.7	7.86	6.9	310	148	104	0.12J	NW 10/29/14 chd wrong 10 9 /10
2	22.7	7.80	6.9	311	end: 31.8	end: 47.2		9 /10
3					start: 28.1	start: 42.0		10 /10
4					Titrant used (mL): 3.7	Titrant used (mL): 5.2		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								10 /10
7								NW 10/29/14 chd wrong ~~8~~ 9 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MW

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10216	Test Photoperiod:	16:8
Sample ID:	SS 1029-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 11/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
X 539 Mu chemistries time/Initial

Number Daily Renewals: 1
DS 720 renewal time/Initials ~~renewal~~
~~renewal time/Initials renewal~~
Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: yes no n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MWr
1	22.7	7.95	6.4	321	140/144	110/110	0.10	9 /10
2	22.6	7.97	6.5	315	end: 6.9/6.5	end: 10.7/16.2	DUP= 0.10	10 /10
3					start: 3.4/6.9	start: 5.2/10.7		10 /10
4					Titrant used (mL): 3.5/3.6	Titrant used (mL): 5.5/5.5		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								9 /10
7								9 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MW

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10217	Test Photoperiod:	16:8
Sample ID:	SS 1001-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

1539 MW chemistries time/Initial

Number Daily Renewals: 1

~~1005~~ 720 renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.3	7.82	6.6	315	140	100	0.12 J	10 /10
2	22.5	7.86	6.8	313	end: 14.0	end: 21.2		10 /10
3					start: 10.5	start: 16.2		9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.0		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								9 /10
7								10 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10218	Test Photoperiod:	16:8
Sample ID:	SS 1042-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~0539~~ MWC chemistries time/Initial

Number Daily Renewals: 1
~~0930~~ 720 renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MWC
1	22.5	7.61	5.3	328	140	108	0.14 J	3 /10
2	22.6	7.67	5.4	328	end: 17.5	end: 26.6		5 /10
3					start: 14.0	start: 21.2		4 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.4		4 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		7 /10
6								5 /10
7								8 /10
8								4 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: ML ✓

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10219	Test Photoperiod:	16:8
Sample ID:	SS 1009-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day:	28	Number Daily Renewals:	1
Date:	12/2/2014	☒ DS 720 renewal time/Initials	☐ ~~renewal~~
Overlying Water:	Dechlor	☐ ~~renewal time/Initials~~	☐ ~~renewal~~
Overlying Water Batch ID (GLC Number):	NA	Food: ~~YTC#~~	☐ ~~Feed 1.0 ml/replicate~~
☒ 539 MW chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.3	7.80	6.7	311	140	102	0.17 J	9 /10
2	22.2	7.89	6.9	305	end: 21.0	end: 31.7		10 /10
3					start: 17.5	start: 26.6		7 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.1		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								10 /10
7								7 /10
8								8 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10220	Test Photoperiod:	16:8
Sample ID:	SS 1017-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/29/14 - 10/29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

~~1539~~ MW chemistries time/Initial

Number Daily Renewals: 1

~~1105~~ 720 renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MW
1	22.3	7.88	6.8	314	132	164	0.19 U	10 /10
2	22.3	7.89	7.0	313	end: 24.3	end: 36.9		9 /10
3					start: 21.0	start: 31.7		10 /10
4					Titrant used (mL): 3.3	Titrant used (mL): 5.2		10 /10
5					Sample volume (mL): 25.0	Sample volume (mL): 50		7 /10
6								10 /10
7								8 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10221	Test Photoperiod:	16:8
Sample ID:	SS 1011-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day:	28	Number Daily Renewals:	1
Date:	12/2/2014	DS 7 20 renewal time/Initials	~~renewal~~
Overlying Water:	Dechlor	renewal time/Initials	renewal
Overlying Water Batch ID (GLC Number):	NA	Food: ~~YTC#~~	~~Feed 1.0 ml/replicate~~
539 nw chemistries time/Initial		Screens Cleaned:	yes ~~no~~ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	160	4	Init: hmr
1	22.3	7.82	6.7	311	140	104	0.18J	9 /10
2	22.4	7.77	6.6	312	end: 27.8	end: 42.2		7 /10
3					start: 24.3	DS 12/2/14 start: ~~36.9~~ 37.0		8 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.2		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								8 /10
7								8 /10
8								7 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLV

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10222	Test Photoperiod:	16:8
Sample ID:	SS 1031-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29-14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
X 539 pm chemistries time/Initial

Number Daily Renewals: 1
WDS 720 renewal time/Initials ~~renewal~~
~~renewal time/Initials~~ ~~renewal~~
Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: [illegible]
1	22.4	7.81	6.1	315	148/140	108/106	0.13 J	10 /10
2	22.4	7.84	5.9	314	end: 3.7/7.2	end: 5.4/10.7	DUP= 0.14 J	10 /10
3					start: 0.0/3.7	start: 0.0/5.4		10 /10
4					Titrant used (mL): 3.7/3.5	Titrant used (mL): 5.4/5.3		7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								10 /10
7								8 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

GLEC

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLW

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10223	Test Photoperiod:	16:8
Sample ID:	SS 1033-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
X 539 MWr chemistries time/Initial

Number Daily Renewals:
☒ DS 7 28 renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MWr
1	22.3	7.86	6.4	320	140	100	0.14 J	10 /10
2	22.5	7.99	6.5	319	end: 10.7	end: 15.7		8 /10
3					start: 7.2	start: 10.7		7 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.0		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								10 /10
7								10 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLV

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10224	Test Photoperiod:	16:8
Sample ID:	SS 1034-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ 539 Nw chemistries time/Initial

Number Daily Renewals: 1
☒ DS 720 renewal time/Initials ☐ ~~renewal~~
☐ ~~renewal time/Initials~~ ☐ ~~renewal~~
Food: ~~YTC#~~ ☐ ~~Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MLV
1	22.3	7.81	5.5	343	156	108	0.10 J	9 /10
2	22.3	7.89	5.7	339	end: 14.6	end: 21.1		10 /10
3					start: 10.7	start: 15.7		10 /10
4					Titrant used (mL): 3.9	Titrant used (mL): 5.4		8 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								10 /10
7								10 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV 10/8 MGM

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10225	Test Photoperiod:	16:8
Sample ID:	SS 1002-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~✓~~ 534 chemistries time/Initial

Number Daily Renewals: 1
~~✓~~ DS 720 renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MLV
1	22.6	7.64	6.2	312	136	100	0.06 J	9 /10
2	22.4	7.72	6.0	315	end: 18.0	end: 26.1		10 /10
3					start: 14.6	start: 21.1		10 /10
4					Titrant used (mL): 3.4	Titrant used (mL): 5.0		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		8 /10
6								9 /10
7								10 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10226	Test Photoperiod:	16:8
Sample ID:	SS 1005-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

X 539 AW chemistries time/Initial

Number Daily Renewals: 1

☒ D3 720 renewal time/Initials ☐ ~~renewal~~

☐ ~~renewal time/Initials~~ ☐ ~~renewal~~

Food: ~~YTC#~~ ☐ ~~Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: MLV
1	22.2	7.82	6.6	310	144	102	0.08J	10 /10
2	22.3	7.89	6.4	311	end: 21.6	end: 31.2		8 /10
3					start: 18.0	start: 26.1		8 /10
4					Titrant used (mL): 3.6	Titrant used (mL): 5.1		MLV 12/2/14 ~~8~~ 7 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		10 /10
6								9 /10
7								10 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10254	Test Photoperiod:	16:8
Sample ID:	SS 1041-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28

Date: 12/2/2014

Overlying Water: Dechlor

Overlying Water Batch ID (GLC Number): NA

KSA Nur chemistries time/Initial

Number Daily Renewals: 1

KDS 720 renewal time/Initials ~~renewal~~

~~renewal time/Initials~~ ~~renewal~~

Food: ~~YTC#~~ ~~Feed 1.0 ml/replicate~~

Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: Nur
1	22.6	7.76	6.2	316	140	106	0.13 J	10 /10
2	22.5	7.85	6.6	315	end: 25.1	end: 36.5		10 /10
3					start: 21.6	start: 31.2		9 /10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.3		10 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								9 /10
7								10 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.

*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:

RL = Reporting Limit (0.10 mg/L).

MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.

U = Below MDL. *J* = ≥ MDL and < RL.

KEY:

AV: Animals Visible

NAV: No Animals Visible

FOV: Foreign Organism Visible

revised: June 2012

QC'd by: MLV

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

Project Number:	2290-01	Project Name:	Stantec St. Louis River
GLC#:	10256	Test Photoperiod:	16:8
Sample ID:	SS 1012-AT	Test System:	Sediment-100 mL and Overlying Water-175mL Manual Delivery
Test Species:	*Hyalella azteca*	Test Temperature:	23± 1°C
Date Addition of Sediment:	11/3/2014	Test Organism Source/Age:	In House 7/8 day 1/28-29/14
Test Initiation Date:	11/4/2014	Test Termination Date:	12/2/2014

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☑ 539nus chemistries time/Initial

Number Daily Renewals: 1
☑ DS 720 renewal time/Initials ~~☐ renewal~~
~~☐ renewal time/Initials ☐ renewal~~
Food: ~~YTC#~~ ~~☐ Feed 1.0 ml/replicate~~
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: DWS
1	22.3	7.79	7.1	299.8	128	98	0.15J	10 /10
2	22.3	7.81	6.7	301	end: 28.3	end: 41.4		9 /10
3					start: 25.1	start: 36.5		9 /10
4					Titrant used (mL): 3.2	Titrant used (mL): 4.9		9 /10
5					Sample volume (mL): 25	Sample volume (mL): 50		9 /10
6								10 /10
7								10 /10
8								10 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

GLEC

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day Survival and Growth Whole Sediment Toxicity Test

QC'd by: MLV

Project Number: 2290-01	Project Name: Stantec St. Louis River		
GLC#: Water Only		Test Photoperiod: 16:8	
Sample ID: Secondary Control		Test System: Sediment-100 mL and Overlying Water-175mL Manual Delivery	
Test Species: *Hyalella azteca*		Test Temperature: 23± 1°C	
Date Addition of Sediment: 11/3/2014		Test Organism Source/Age:	In House 7/8 day 10/28-29/14
Test Initiation Date: 11/4/2014		Test Termination Date: 12/2/2014	

Test Day: 28
Date: 12/2/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
✗ 0539rwr chemistries time/Initial

Number Daily Renewals: 0
□ renewal time/Initials ~~□ renewal~~
~~□ renewal time/Initials □ renewal~~
Food: ~~YTC#~~ ~~□ Feed 1.0 ml/replicate~~
Screens Cleaned: □ yes ✗ no □ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ # Surviving Organisms
Record Meter ID	175	175	175	175	N/A	168	4	Init: mwr
1	22.8	7.92	7.0	313	144	100	0.11 J	8 /10
2	22.7	7.98	7.1	315	end: 6.9	end: 10.3		9 /10
3					start: 3.3	start: 5.3		10 /10
4					Titrant used (mL): 3.6	Titrant used (mL): 5.0		9 /10
5					Sample volume (mL): 2.5	Sample volume (mL): 50		8 /10
6								10 /10
7								9 /10
8								9 /10

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.10 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. *J* = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible

revised: June 2012

Page 1 of 2

QC'd by: ES

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	~~N/A~~ Con LCS 124	Drying Duration (Hours): ~24 hrs	Dessicator: **# 128**
Sample ID:	Laboratory Control	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/19/14 1430
Test Dates:	**11/4/2014**	Technician's Initials: [illegible]	Weigh Date / Initials: 12/19/14 [illegible]
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84880	0.84486		10	#DIV/0!	
2	10	0.85352	0.84894		10	#DIV/0!	
3	10	0.84848	0.84465		10	#DIV/0!	
4	10	0.84182	0.83731		10	#DIV/0!	
5	10	0.84408	0.83986		9	#DIV/0!	
6	10	0.84828	0.84497		10	#DIV/0!	
7	10	0.84367	0.83958		10	#DIV/0!	
8	10	0.83984	0.83650		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	0.82096	0.81922	0.00174 0	80	Average at Day 0 (mg) 0.02175	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**LCS 124**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**Laboratory Control**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/19/2014 14:30**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/19/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84880	0.84486	0.00394	10	0.39400	0.39400
2	10	0.85352	0.84894	0.00458	10	0.45800	0.45800
3	10	0.84848	0.84465	0.00383	10	0.38300	0.38300
4	10	0.84182	0.83731	0.00451	10	0.45100	0.45100
5	10	0.84408	0.83986	0.00422	9	0.46889	0.42200
6	10	0.84828	0.84497	0.00331	10	0.33100	0.33100
7	10	0.84367	0.83958	0.00409	10	0.40900	0.40900
8	10	0.83984	0.83650	0.00334	10	0.33400	0.33400
					AVERAGE:	0.40361	0.39775

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	~~N/A~~ H2O Con	Drying Duration (Hours): ~**24 hrs**	Dessicator: **# 128**
Sample ID:	Secondary Control	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/19/14 1430
Test Dates:	**11/4/2014**	Technician's Initials: NW	Weigh Date / Initials: NW 12/19/14
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84805	0.84597		8	#DIV/0!	
2	10	0.84553	0.84380		9	#DIV/0!	
3	10	0.83861	0.83559		10	#DIV/0!	
4	10	0.84304	0.84086		9	#DIV/0!	
5	10	0.84920	0.84815		8	#DIV/0!	
6	10	0.85037	0.84754		10	#DIV/0!	
7	10	0.84818	0.84491		9	#DIV/0!	
8	10	0.85060	0.84920		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See	control	page	0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**Water Only**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**Secondary Control**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/19/2014 14:30**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/19/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84805	0.84592	0.00213	8	0.26625	0.21300
2	10	0.84553	0.84380	0.00173	9	0.19222	0.17300
3	10	0.83861	0.83559	0.00302	10	0.30200	0.30200
4	10	0.84304	0.84086	0.00218	9	0.24222	0.21800
5	10	0.84920	0.84815	0.00105	8	0.13125	0.10500
6	10	0.85037	0.84754	0.00283	10	0.28300	0.28300
7	10	0.84818	0.84491	0.00327	9	0.36333	0.32700
8	10	0.85060	0.84920	0.0014	9	0.15556	0.14000
					AVERAGE:	0.24198	0.22012

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	10207	Drying Duration (Hours): ~ **24 hrs**	Dessicator: **# 128**
Sample ID:	SS-1032-AT	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/19/14 1430
Test Dates:	**11/4/2014**	Technician's Initials: [illegible]	Weigh Date / Initials: 12/19/14 [illegible]
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84309	0.84215		8	#DIV/0!	
2	10	0.84191	0.84055		10	#DIV/0!	
3	10	0.84054	0.83946		10	#DIV/0!	
4	10	0.84631	0.84539		9	#DIV/0!	
5	10	0.83734	0.83626		9	#DIV/0!	
6	10	0.83555	0.83468		9	#DIV/0!	
7	10	0.83945	0.83827		10	#DIV/0!	
8	10	0.84738	0.84615		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10207**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1022-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/19/2014 14:30**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/19/14 mwg**
	12/2/2014				

Replicate Number	**A** Number of Organisms at Test Initiation	**B** Dry Weight of Pan and Organisms (g)	**C** Dry Weight of Pan (g)	**B-C** Total Dry Weight of Organisms (g)	**D** Number of Organisms Weighed	**B-C/D** Average Weight (mg)	**B-C/A** Biomass Weight (mg)
1	10	0.84309	0.84215	0.00094	8	0.11750	0.09400
2	10	0.84191	0.84055	0.00136	10	0.13600	0.13600
3	10	0.84054	0.83946	0.00108	10	0.10800	0.10800
4	10	0.84631	0.84539	0.00092	9	0.10222	0.09200
5	10	0.83734	0.83626	0.00108	9	0.12000	0.10800
6	10	0.83555	0.83468	0.00087	9	0.09667	0.08700
7	10	0.83945	0.83827	0.00118	10	0.11800	0.11800
8	10	0.84738	0.84615	0.00123	9	0.13667	0.12300
					AVERAGE:	0.11688	0.10825

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	~~N/A~~ 10208	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	SS 1024-AT	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/19/14 1430
Test Dates:	**11/4/2014**	Technician's Initials: NW	Weigh Date / Initials: 12/19/14 NW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83901	0.83738		10	#DIV/0!	
2	10	0.83920	0.83757		10	#DIV/0!	
3	10	0.84311	0.84180		9	#DIV/0!	
4	10	0.83504	0.83376		10	#DIV/0!	
5	10	0.83970	0.83818		9	#DIV/0!	
6	10	0.84667	0.84544		9	#DIV/0!	
7	10	0.84020	0.83863		9	#DIV/0!	
8	10	0.84091	0.83906		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10208**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1024-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/19/2014 14:30AM**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/19/14 mwg**
	12/2/2014				

Replicate Number	**A** Number of Organisms at Test Initiation	**B** Dry Weight of Pan and Organisms (g)	**C** Dry Weight of Pan (g)	**B-C** Total Dry Weight of Organisms (g)	**D** Number of Organisms Weighed	**B-C/D** Average Weight (mg)	**B-C/A** Biomass Weight (mg)
1	10	0.83901	0.83738	0.00163	10	0.16300	0.16300
2	10	0.83920	0.83757	0.00163	10	0.16300	0.16300
3	10	0.84311	0.84180	0.00131	9	0.14556	0.13100
4	10	0.83504	0.83376	0.00128	10	0.12800	0.12800
5	10	0.83970	0.83818	0.00152	9	0.16889	0.15200
6	10	0.84667	0.84544	0.00123	9	0.13667	0.12300
7	10	0.84020	0.83863	0.00157	9	0.17444	0.15700
8	10	0.84091	0.83906	0.00185	9	0.20556	0.18500
					AVERAGE:	0.16064	0.15025

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

QC'd by: ES

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Great Lakes Environmental Center

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	10209	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	SS1032-AT	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/19/14 1430
Test Dates:	**11/4/2014**	Technician's Initials: MW	Weigh Date / Initials: 12/19/14 MW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83879	0.838784		9	#DIV/0!	
2	10	0.83970	0.83844		9	#DIV/0!	
3	10	0.84234	0.84103		9	#DIV/0!	
4	10	0.84641	0.84430		10	#DIV/0!	
5	10	0.83221	0.83078		8	#DIV/0!	
6	10	0.82965	0.82827		9	#DIV/0!	
7	10	0.82873	0.82743		10	#DIV/0!	
8	10	0.84766	0.846633		8	#DIV/0!	
			MW 12/19/14			AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10209**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1032-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/19/2014 14:30**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/19/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83879	0.83784	0.00095	9	0.10556	0.09500
2	10	0.83970	0.83844	0.00126	9	0.14000	0.12600
3	10	0.84234	0.84103	0.00131	9	0.14556	0.13100
4	10	0.84641	0.84430	0.00211	10	0.21100	0.21100
5	10	0.83221	0.83078	0.00143	8	0.17875	0.14300
6	10	0.82965	0.82827	0.00138	9	0.15333	0.13800
7	10	0.82873	0.82743	0.0013	10	0.13000	0.13000
8	10	0.84766	0.84633	0.00133	8	0.16625	0.13300
					AVERAGE:	0.15381	0.13837

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Great Lakes Environmental Center

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10210**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1021-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1207
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWF	Weigh Date / Initials: 12/22/14 0545 MWF
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84978	0.84888		7	#DIV/0!	
2	10	0.84970	0.84879		10	#DIV/0!	
3	10	0.83479	0.83364		10	#DIV/0!	
4	10	0.83737	0.83617		10	#DIV/0!	
5	10	0.84087	0.83965		9	#DIV/0!	
6	10	0.84405	0.84273		8	#DIV/0!	
7	10	0.83795	0.83720		7	#DIV/0!	
8	10	0.83938	0.83777		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10210**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1021-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84978	0.84888	0.0009	7	0.12857	0.09000
2	10	0.84970	0.84879	0.00091	10	0.09100	0.09100
3	10	0.83479	0.83364	0.00115	10	0.11500	0.11500
4	10	0.83737	0.83617	0.0012	10	0.12000	0.12000
5	10	0.84087	0.83965	0.00122	9	0.13556	0.12200
6	10	0.84405	0.84273	0.00132	8	0.16500	0.13200
7	10	0.83795	0.83720	0.00075	7	0.10714	0.07500
8	10	0.83938	0.83777	0.00161	9	0.17889	0.16100
					AVERAGE:	0.13014	0.11325

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10212**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1026-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545 mur
Test Dates:	**11/4/2014**	Technician's Initials: mur	Weigh Date / Initials: 12/22/14 0545 mur
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84064	0.83900		8	#DIV/0!	
2	10	0.84523	0.84370		8	#DIV/0!	
3	10	0.84077	0.83954		8	#DIV/0!	
4	10	0.83919	0.83772		9	#DIV/0!	
5	10	0.84529	0.84294		10	#DIV/0!	
6	10	0.85356	0.85200		10	#DIV/0!	
7	10	0.84285	0.84096		9	#DIV/0!	
8	10	0.84927	0.84734		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see attached page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10212**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1026-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84064	0.83900	0.00164	8	0.20500	0.16400
2	10	0.84523	0.84370	0.00153	8	0.19125	0.15300
3	10	0.84077	0.83954	0.00123	8	0.15375	0.12300
4	10	0.83919	0.83772	0.00147	9	0.16333	0.14700
5	10	0.84529	0.84294	0.00235	10	0.23500	0.23500
6	10	0.85356	0.85200	0.00156	10	0.15600	0.15600
7	10	0.84285	0.84096	0.00189	9	0.21000	0.18900
8	10	0.84927	0.84734	0.00193	9	0.21444	0.19300
					AVERAGE:	0.19110	0.17000

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10213**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1028-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1207
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1207	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWS	Weigh Date / Initials: 12/22/14 0545 MWS
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83905	0.83752		8	#DIV/0!	
2	10	0.84455	0.84286		9	#DIV/0!	
3	10	0.84384	0.84221		9	#DIV/0!	
4	10	0.84656	0.84450		9	#DIV/0!	
5	10	0.84187	0.83901		10	#DIV/0!	
6	10	0.84146	0.83915		9	#DIV/0!	
7	10	0.83900	0.83802		8	#DIV/0!	
8	10	0.84150	0.84058		8	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven: **Blue M**			
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**			
GLC#:	**10213**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator: **# 128**	
Sample ID:	**SS 1028-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83905	0.83752	0.00153	8	0.19125	0.15300
2	10	0.84455	0.84286	0.00169	9	0.18778	0.16900
3	10	0.84384	0.84221	0.00163	9	0.18111	0.16300
4	10	0.84656	0.84450	0.00206	9	0.22889	0.20600
5	10	0.84187	0.83901	0.00286	10	0.28600	0.28600
6	10	0.84146	0.83915	0.00231	9	0.25667	0.23100
7	10	0.83900	0.83802	0.00098	8	0.12250	0.09800
8	10	0.84150	0.84058	0.00092	8	0.11500	0.09200
					AVERAGE:	0.19615	0.17475

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Great Lakes Environmental Center

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10214**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1025-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1207
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1207	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWW	Weigh Date / Initials: 12/22/14 0545 MWW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84031	0.83880		10	#DIV/0!	
2	10	0.84100	0.83948		10	#DIV/0!	
3	10	0.84682	0.84533		8	#DIV/0!	
4	10	0.84800	0.84688		7	#DIV/0!	
5	10	0.84771	0.84619		9	#DIV/0!	
6	10	0.84061	0.83958		7	#DIV/0!	
7	10	0.84761	0.84570		9	#DIV/0!	
8	10	0.83776	0.83620		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10214**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1025-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84031	0.83880	0.00151	10	0.15100	0.15100
2	10	0.84100	0.83948	0.00152	10	0.15200	0.15200
3	10	0.84682	0.84533	0.00149	8	0.18625	0.14900
4	10	0.84800	0.84688	0.00112	7	0.16000	0.11200
5	10	0.84771	0.84619	0.00152	9	0.16889	0.15200
6	10	0.84061	0.83958	0.00103	7	0.14714	0.10300
7	10	0.84761	0.84570	0.00191	9	0.21222	0.19100
8	10	0.83776	0.83620	0.00156	10	0.15600	0.15600
					AVERAGE:	0.16669	0.14575

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10215**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1010-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: RMW	Weigh Date / Initials: 12/22/14 0545 RMW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83895	0.83784		10	#DIV/0!	
2	10	0.85191	0.85060		9	#DIV/0!	
3	10	0.84170	0.84060		10	#DIV/0!	
4	10	0.84084	0.83970		10	#DIV/0!	
5	10	0.84412	0.84252		9	#DIV/0!	
6	10	0.83631	0.83491		10	#DIV/0!	
7	10	0.84774	0.84668		9	#DIV/0!	
8	10	0.83810	0.83680		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10215**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1010-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83895	0.83784	0.00111	10	0.11100	0.11100
2	10	0.85191	0.85060	0.00131	9	0.14556	0.13100
3	10	0.84170	0.84060	0.0011	10	0.11000	0.11000
4	10	0.84084	0.83970	0.00114	10	0.11400	0.11400
5	10	0.84412	0.84252	0.0016	9	0.17778	0.16000
6	10	0.83631	0.83491	0.0014	10	0.14000	0.14000
7	10	0.84774	0.84668	0.00106	9	0.11778	0.10600
8	10	0.83810	0.83680	0.0013	10	0.13000	0.13000
					AVERAGE:	0.13076	0.12525

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

GLEC

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10216**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1029-AT**	Date/Time in: 12/3/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/23/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: mur	Weigh Date / Initials: 12/23/14 0545 mur
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84091	0.83914		9	#DIV/0!	
2	10	0.84736	0.84546		10	#DIV/0!	
3	10	0.84892	0.84737		10	#DIV/0!	
4	10	0.84758	0.84614		10	#DIV/0!	
5	10	0.83840	0.83658		10	#DIV/0!	
6	10	0.84221	0.84057		9	#DIV/0!	
7	10	0.85352	0.85173		9	#DIV/0!	
8	10	0.84581	0.84391		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10216**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1029-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	**A** Number of Organisms at Test Initiation	**B** Dry Weight of Pan and Organisms (g)	**C** Dry Weight of Pan (g)	**B-C** Total Dry Weight of Organisms (g)	**D** Number of Organisms Weighed	**B-C/D** Average Weight (mg)	**B-C/A** Biomass Weight (mg)
1	10	0.84091	0.83914	0.00177	9	0.19667	0.17700
2	10	0.84736	0.84546	0.0019	10	0.19000	0.19000
3	10	0.84892	0.84737	0.00155	10	0.15500	0.15500
4	10	0.84758	0.84614	0.00144	10	0.14400	0.14400
5	10	0.83840	0.83658	0.00182	10	0.18200	0.18200
6	10	0.84221	0.84057	0.00164	9	0.18222	0.16400
7	10	0.85352	0.85173	0.00179	9	0.19889	0.17900
8	10	0.84581	0.84391	0.0019	9	0.21111	0.19000
					AVERAGE:	0.18249	0.17263

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10217**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1001-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWS	Weigh Date / Initials: 12/22/14 MWS
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.85105	0.84931		10	#DIV/0!	
2	10	0.85029	0.84886		10	#DIV/0!	
3	10	0.83648	0.83540		9	#DIV/0!	
4	10	0.84089	0.83931		10	#DIV/0!	
5	10	0.84394	0.84227		9	#DIV/0!	
6	10	0.84976	0.84816		9	#DIV/0!	
7	10	0.84148	0.84017		10	#DIV/0!	
8	10	0.83968	0.83799		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10217**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1001-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.85105	0.84931	0.00174	10	0.17400	0.17400
2	10	0.85029	0.84886	0.00143	10	0.14300	0.14300
3	10	0.83648	0.83540	0.00108	9	0.12000	0.10800
4	10	0.84089	0.83931	0.00158	10	0.15800	0.15800
5	10	0.84394	0.84227	0.00167	9	0.18556	0.16700
6	10	0.84976	0.84816	0.0016	9	0.17778	0.16000
7	10	0.84148	0.84017	0.00131	10	0.13100	0.13100
8	10	0.83968	0.83799	0.00169	10	0.16900	0.16900
					AVERAGE:	0.15729	0.15125

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Great Lakes Environmental Center

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10218**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1042-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: RMW	Weigh Date / Initials: 12/22/14 RMW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83952	0.83815		3	#DIV/0!	
2	10	0.84242	0.84062		5	#DIV/0!	
3	10	0.84878	0.84675		4	#DIV/0!	
4	10	0.84549	0.84375		4	#DIV/0!	
5	10	0.843708 RMW 12/22/14	0.83563		7	#DIV/0!	
6	10	0.84909	0.84720		5	#DIV/0!	
7	10	0.84303	0.84124		8	#DIV/0!	
8	10	0.84510	0.84225		4	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10218**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1042-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83952	0.83815	0.00137	3	0.45667	0.13700
2	10	0.84242	0.84062	0.0018	5	0.36000	0.18000
3	10	0.84878	0.84675	0.00203	4	0.50750	0.20300
4	10	0.84549	0.84375	0.00174	4	0.43500	0.17400
5	10	0.83708	0.83563	0.00145	7	0.20714	0.14500
6	10	0.84909	0.84720	0.00189	5	0.37800	0.18900
7	10	0.84303	0.84124	0.00179	8	0.22375	0.17900
8	10	0.84510	0.84225	0.00285	4	0.71250	0.28500
					AVERAGE:	0.41007	0.18650

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10219**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1009-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWT	Weigh Date / Initials: 12/22/14 MWT
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84243	0.84071		9	#DIV/0!	
2	10	0.83520	0.83417		10	#DIV/0!	
3	10	0.83842	0.83732		7	#DIV/0!	
4	10	0.83826	0.83681		9	#DIV/0!	
5	10	0.83422	0.83230		10	#DIV/0!	
6	10	0.83976	0.83854		10	#DIV/0!	
7	10	0.84301	0.84170		7	#DIV/0!	
8	10	0.84249	0.84103		8	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10219**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1009-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	**A** Number of Organisms at Test Initiation	**B** Dry Weight of Pan and Organisms (g)	**C** Dry Weight of Pan (g)	**B-C** Total Dry Weight of Organisms (g)	**D** Number of Organisms Weighed	**B-C/D** Average Weight (mg)	**B-C/A** Biomass Weight (mg)
1	10	0.84243	0.84071	0.00172	9	0.19111	0.17200
2	10	0.83520	0.83417	0.00103	10	0.10300	0.10300
3	10	0.83842	0.83732	0.0011	7	0.15714	0.11000
4	10	0.83826	0.83681	0.00145	9	0.16111	0.14500
5	10	0.83422	0.83230	0.00192	10	0.19200	0.19200
6	10	0.83976	0.83854	0.00122	10	0.12200	0.12200
7	10	0.84301	0.84170	0.00131	7	0.18714	0.13100
8	10	0.84249	0.84103	0.00146	8	0.18250	0.14600
					AVERAGE:	0.16200	0.14013

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10220**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1017-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: [illegible]	Weigh Date / Initials: 12/22/14 [illegible]
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84711	0.84547		10	#DIV/0!	
2	10	0.84216	0.84075		9	#DIV/0!	
3	10	0.84232	0.84100		10	#DIV/0!	
4	10	0.83722	0.83614		10	#DIV/0!	
5	10	0.83557	0.83440		7	#DIV/0!	
6	10	0.83477	0.83313		10	#DIV/0!	
7	10	0.83875	0.83720		8	#DIV/0!	
8	10	0.83901	0.83722		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10220**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1017-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84711	0.84547	0.00164	10	0.16400	0.16400
2	10	0.84216	0.84075	0.00141	9	0.15667	0.14100
3	10	0.84232	0.84100	0.00132	10	0.13200	0.13200
4	10	0.83722	0.83614	0.00108	10	0.10800	0.10800
5	10	0.83557	0.83440	0.00117	7	0.16714	0.11700
6	10	0.83477	0.83313	0.00164	10	0.16400	0.16400
7	10	0.83875	0.83720	0.00155	8	0.19375	0.15500
8	10	0.83901	0.83722	0.00179	10	0.17900	0.17900
					AVERAGE:	0.15807	0.14500

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10221**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1011-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: mwr	Weigh Date / Initials: 12/22/14 0545 mwr
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84647	0.84493		9	#DIV/0!	
2	10	0.83967	0.83887		7	#DIV/0!	
3	10	0.83954	0.83812		8	#DIV/0!	
4	10	0.84746	0.84606		10	#DIV/0!	
5	10	0.83936	0.83790		10	#DIV/0!	
6	10	0.83885	0.83808		8	#DIV/0!	
7	10	0.84283	0.84142		8	#DIV/0!	
8	10	0.84373	0.84210		7	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10221**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1011-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84647	0.84493	0.00154	9	0.17111	0.15400
2	10	0.83967	0.83887	0.0008	7	0.11429	0.08000
3	10	0.83954	0.83812	0.00142	8	0.17750	0.14200
4	10	0.84746	0.84606	0.0014	10	0.14000	0.14000
5	10	0.83936	0.83790	0.00146	10	0.14600	0.14600
6	10	0.83885	0.83808	0.00077	8	0.09625	0.07700
7	10	0.84283	0.84142	0.00141	8	0.17625	0.14100
8	10	0.84373	0.84210	0.00163	7	0.23286	0.16300
					AVERAGE:	0.15678	0.13037

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

GLEC
Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10222**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1031-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: Nwr	Weigh Date / Initials: 12/22/14 0545 Nwr
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83763	0.83617		10	#DIV/0!	
2	10	0.83938	0.83791		10	#DIV/0!	
3	10	0.84326	0.84179		10	#DIV/0!	
4	10	0.83150	0.83028		7	#DIV/0!	
5	10	0.83849	0.83661		10	#DIV/0!	
6	10	0.84163	0.84011		10	#DIV/0!	
7	10	0.84494	0.84350		8	#DIV/0!	
8	10	0.83880	0.83726		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10222**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1031-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83763	0.83617	0.00146	10	0.14600	0.14600
2	10	0.83938	0.83797	0.00141	10	0.14100	0.14100
3	10	0.84326	0.84179	0.00147	10	0.14700	0.14700
4	10	0.83150	0.83028	0.00122	7	0.17429	0.12200
5	10	0.83849	0.83661	0.00188	10	0.18800	0.18800
6	10	0.84163	0.84011	0.00152	10	0.15200	0.15200
7	10	0.84494	0.84350	0.00144	8	0.18000	0.14400
8	10	0.83880	0.83726	0.00154	10	0.15400	0.15400
					AVERAGE:	0.16029	0.14925

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10223**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1033-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: NWR	Weigh Date / Initials: 12/22/14 NWR
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84141	0.83974		10	#DIV/0!	
2	10	0.84429	0.83~~9~~4312 NWR 12/22		8	#DIV/0!	
3	10	0.83979	0.83840		7	#DIV/0!	
4	10	0.84139	0.83955		10	#DIV/0!	
5	10	0.83856	0.83712		9	#DIV/0!	
6	10	0.84006	0.83831		10	#DIV/0!	
7	10	0.83339	0.83~~415~~157 NWR 12/22		10	#DIV/0!	
8	10	0.84211	0.84022		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10223**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1033-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84141	0.83974	0.00167	10	0.16700	0.16700
2	10	0.84429	0.84312	0.00117	8	0.14625	0.11700
3	10	0.83979	0.83840	0.00139	7	0.19857	0.13900
4	10	0.84139	0.83955	0.00184	10	0.18400	0.18400
5	10	0.83856	0.83712	0.00144	9	0.16000	0.14400
6	10	0.84006	0.83831	0.00175	10	0.17500	0.17500
7	10	0.83339	0.83157	0.00182	10	0.18200	0.18200
8	10	0.84211	0.84022	0.00189	10	0.18900	0.18900
					AVERAGE:	0.17523	0.16212

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10224**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1034-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1207
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1207	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MWK	Weigh Date / Initials: 12/22/14 MWK
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83863	0.83600		9	#DIV/0!	
2	10	0.84026	0.83781		10	#DIV/0!	
3	10	0.84156	0.83982		10	#DIV/0!	
4	10	0.84774	0.84559		8	#DIV/0!	
5	10	0.85061	0.84833		10	#DIV/0!	
6	10	0.85272	0.85063		10	#DIV/0!	
7	10	0.83786	0.83585		10	#DIV/0!	
8	10	0.85150	0.84891		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10224**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1034-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.83863	0.83600	0.00263	9	0.29222	0.26300
2	10	0.84026	0.83781	0.00245	10	0.24500	0.24500
3	10	0.84156	0.83982	0.00174	10	0.17400	0.17400
4	10	0.84774	0.84559	0.00215	8	0.26875	0.21500
5	10	0.85061	0.84833	0.00228	10	0.22800	0.22800
6	10	0.85272	0.85063	0.00209	10	0.20900	0.20900
7	10	0.83786	0.83585	0.00201	10	0.20100	0.20100
8	10	0.85150	0.84891	0.00259	9	0.28778	0.25900
					AVERAGE:	0.23822	0.22425

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Page 1 of 2

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Great Lakes Environmental Center

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**		
GLC#:	**10225**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**	
Sample ID:	**SS 1002-AT**	Date/Time in: 12/2/14 1100	Date/Time in:	12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out:	12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: NWT	Weigh Date / Initials:	NWT 12/22/14
	12/2/2014			

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84294	0.84126		9	#DIV/0!	
2	10	0.83400	0.83210		10	#DIV/0!	
3	10	0.84524	0.84373		10	#DIV/0!	
4	10	0.84699	0.84530		9	#DIV/0!	
5	10	0.84182	0.84066		8	#DIV/0!	
6	10	0.83874	0.83700		9	#DIV/0!	
7	10	0.84596	0.84350		10	#DIV/0!	
8	10	0.84160	0.83990		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10225**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1002-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84294	0.84126	0.00168	9	0.18667	0.16800
2	10	0.83400	0.83210	0.0019	10	0.19000	0.19000
3	10	0.84524	0.84373	0.00151	10	0.15100	0.15100
4	10	0.84699	0.84530	0.00169	9	0.18778	0.16900
5	10	0.84182	0.84066	0.00116	8	0.14500	0.11600
6	10	0.83874	0.83700	0.00174	9	0.19333	0.17400
7	10	0.84596	0.84350	0.00246	10	0.24600	0.24600
8	10	0.84160	0.83990	0.0017	10	0.17000	0.17000
					AVERAGE:	0.18372	0.17300

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page 1 of 2

QC'd by: GS

Project Number:	2290-01	Type/Model of Drying Oven:	Blue M		
Project Name:	Stantec St. Louis River	Oven Temperature:	60 °C		
GLC#:	10226	Drying Duration (Hours):	~ 24 hrs	Dessicator:	# 128
Sample ID:	SS 1005-AT	Date/Time in:	12/2/14 1100	Date/Time in:	12/3/14 1202
Test Species:	*Hyalella azteca*	Date/Time out:	12/3/14 1202	Date/Time out:	12/22/14 0545
Test Dates:	11/4/2014	Technician's Initials:	MWF	Weigh Date / Initials:	12/22/14 MWF
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84558	0.84400		10	#DIV/0!	
2	10	0.83862	0.83738		8	#DIV/0!	
3	10	0.83952	0.83801		8	#DIV/0!	
4	10	0.84410	0.84284		8	#DIV/0!	
5	10	0.83869	0.83750		10	#DIV/0!	
6	10	0.84078	0.83965		9	#DIV/0!	
7	10	0.84185	0.84049		10	#DIV/0!	
8	10	0.84352	0.84170		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	See control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10226**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1005-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	**A** Number of Organisms at Test Initiation	**B** Dry Weight of Pan and Organisms (g)	**C** Dry Weight of Pan (g)	**B-C** Total Dry Weight of Organisms (g)	**D** Number of Organisms Weighed	**B-C/D** Average Weight (mg)	**B-C/A** Biomass Weight (mg)
1	10	0.84558	0.84400	0.00158	10	0.15800	0.15800
2	10	0.83862	0.83738	0.00124	8	0.15500	0.12400
3	10	0.83952	0.83801	0.00151	8	0.18875	0.15100
4	10	0.84410	0.84284	0.00126	8	0.15750	0.12600
5	10	0.83869	0.83750	0.00119	10	0.11900	0.11900
6	10	0.84078	0.83965	0.00113	9	0.12556	0.11300
7	10	0.84185	0.84049	0.00136	10	0.13600	0.13600
8	10	0.84352	0.84170	0.00182	9	0.20222	0.18200
					AVERAGE:	0.15525	0.13863

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10254**	Drying Duration (Hours): **~24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1041-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: MW	Weigh Date / Initials: 12/22/14 MW
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84400	0.84197		10	#DIV/0!	
2	10	0.83881	0.83717		10	#DIV/0!	
3	10	0.83829	0.83680		9	#DIV/0!	
4	10	0.83910	0.83709		10	#DIV/0!	
5	10	0.84823	0.84690		9	#DIV/0!	
6	10	0.84156	0.83925		9	#DIV/0!	
7	10	0.84011	0.83824		10	#DIV/0!	
8	10	0.84566	0.84378		9	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10254**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1041-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84400	0.84197	0.00203	10	0.20300	0.20300
2	10	0.83881	0.83717	0.00164	10	0.16400	0.16400
3	10	0.83829	0.83680	0.00149	9	0.16556	0.14900
4	10	0.83910	0.83709	0.00201	10	0.20100	0.20100
5	10	0.84823	0.84690	0.00133	9	0.14778	0.13300
6	10	0.84156	0.83925	0.00231	9	0.25667	0.23100
7	10	0.84011	0.83824	0.00187	10	0.18700	0.18700
8	10	0.84566	0.84378	0.00188	9	0.20889	0.18800
					AVERAGE:	0.19174	0.18200

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

QC'd by: ES

Project Number:	2290-01	Type/Model of Drying Oven: **Blue M**	
Project Name:	**Stantec St. Louis River**	Oven Temperature: **60 °C**	
GLC#:	**10256**	Drying Duration (Hours): **~ 24 hrs**	Dessicator: **# 128**
Sample ID:	**SS 1012-AT**	Date/Time in: 12/2/14 1100	Date/Time in: 12/3/14 1202
Test Species:	***Hyalella azteca***	Date/Time out: 12/3/14 1202	Date/Time out: 12/22/14 0545
Test Dates:	**11/4/2014**	Technician's Initials: NWK	Weigh Date / Initials: 12/22/14 NWK
	12/2/2014		

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84541	0.84380		10	#DIV/0!	
2	10	0.83882	0.83760		9	#DIV/0!	
3	10	0.83776	0.83661		9	#DIV/0!	
4	10	0.83751	0.83640		9	#DIV/0!	
5	10	0.83773	0.83656		9	#DIV/0!	
6	10	0.84661	0.84543		10	#DIV/0!	
7	10	0.84765	0.84631		10	#DIV/0!	
8	10	0.83852	0.83683		10	#DIV/0!	
						AVERAGE:	

Day 0 weights	80	see control page		0	80	Average at Day 0 (mg)	0

See Attached sheet for calculated weights.

Great Lakes Environmental Center

2290-01
Stantec St. Louis River
Hyalella azteca 28-Day WEIGHT DATA

Page __2__of _2___

QC'd by:__es_____

Project Number:	**2290-01**	Type/Model of Drying Oven:	**Blue M**		
Project Name:	**Stantec St. Louis River**	Oven Temperature:	**60 °C**		
GLC#:	**10256**	Drying Duration (Hours):	**~ 24 hrs**	Dessicator:	**# 128**
Sample ID:	**SS 1012-AT**	Date/Time in:	**12/2/2014 11:00**	Date/Time in:	**12/3/2014 12:02**
Test Species:	***Hyalella azteca***	Date/Time out:	**12/3/2014 12:02**	Date/Time out:	**12/22/2014 5:45**
Test Dates:	**11/4/2014**	Technician's Initials:	mwg	Weigh Date / Initials:	**12/22/14 mwg**
	12/2/2014				

Replicate Number	A Number of Organisms at Test Initiation	B Dry Weight of Pan and Organisms (g)	C Dry Weight of Pan (g)	B-C Total Dry Weight of Organisms (g)	D Number of Organisms Weighed	B-C/D Average Weight (mg)	B-C/A Biomass Weight (mg)
1	10	0.84541	0.84380	0.00161	10	0.16100	0.16100
2	10	0.83882	0.83760	0.00122	9	0.13556	0.12200
3	10	0.83776	0.83661	0.00115	9	0.12778	0.11500
4	10	0.83751	0.83640	0.00111	9	0.12333	0.11100
5	10	0.83773	0.83656	0.00117	9	0.13000	0.11700
6	10	0.84661	0.84543	0.00118	10	0.11800	0.11800
7	10	0.84765	0.84631	0.00134	10	0.13400	0.13400
8	10	0.83852	0.83683	0.00169	10	0.16900	0.16900
					AVERAGE:	0.13733	0.13088

Day 0 weights	80	0.82096	0.81922	0.00174	80	Average at Day 0 (mg)	0.02175

Appendix D2
Hyalella azteca
28-Day Statistical Data
Reference Sediment SS-1031-AT

- Survival
- Weight

Test: EPA 100.1M-Hyalella azteca 28d Survival and Growth T Test ID: 2290haref
Species: HA-Hyalella azteca Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST Sample Type:
Start Date: 11/4/2014 End Date: 12/2/2014 Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0-	Day 4	Day 1(	Day 28	Total Weight	Pan weight	Weigh	Weight Ct 28-	Notes
	1	1	1031-10222	10			10	0.83763	0.83617		10	
	2	2	1031-10222	10			10	0.83938	0.83797		10	
	3	3	1031-10222	10			10	0.84326	0.84179		10	
	4	4	1031-10222	10			7	0.8315	0.83028		7	
	5	5	1031-10222	10			10	0.83849	0.83661		10	
	6	6	1031-10222	10			10	0.84163	0.84011		10	
	7	7	1031-10222	10			8	0.84494	0.8435		8	
	8	8	1031-10222	10			10	0.8388	0.83726		10	
	9	1	1041-10254	10			10	0.844	0.84197		10	
	10	2	1041-10254	10			10	0.83881	0.83717		10	
	11	3	1041-10254	10			9	0.83829	0.8368		9	
	12	4	1041-10254	10			10	0.8391	0.83709		10	
	13	5	1041-10254	10			9	0.84823	0.8469		9	
	14	6	1041-10254	10			9	0.84156	0.83925		9	
	15	7	1041-10254	10			10	0.84011	0.83824		10	
	16	8	1041-10254	10			9	0.84566	0.84378		9	
	17	1	10207	10			8	0.84309	0.84215		8	
	18	2	10207	10			10	0.84191	0.84055		10	
	19	3	10207	10			10	0.84054	0.83946		10	
	20	4	10207	10			9	0.84631	0.84539		9	
	21	5	10207	10			9	0.83734	0.83626		9	
	22	6	10207	10			9	0.83555	0.83468		9	
	23	7	10207	10			10	0.83945	0.83827		10	
	24	8	10207	10			9	0.84738	0.84615		9	
	25	1	10208	10			10	0.83901	0.83738		10	
	26	2	10208	10			10	0.8392	0.83757		10	
	27	3	10208	10			9	0.84311	0.8418		9	
	28	4	10208	10			10	0.83504	0.83376		10	
	29	5	10208	10			9	0.8397	0.83818		9	
	30	6	10208	10			9	0.84667	0.84544		9	
	31	7	10208	10			9	0.8402	0.83863		9	
	32	8	10208	10			9	0.84091	0.83906		9	
	33	1	10209	10			9	0.83879	0.83784		9	
	34	2	10209	10			9	0.8397	0.83844		9	
	35	3	10209	10			9	0.84234	0.84103		9	
	36	4	10209	10			10	0.84641	0.8443		10	
	37	5	10209	10			8	0.83221	0.83078		8	
	38	6	10209	10			9	0.82965	0.82827		9	
	39	7	10209	10			10	0.82873	0.82743		10	
	40	8	10209	10			8	0.84766	0.84633		8	
	41	1	10210	10			7	0.84978	0.84888		7	
	42	2	10210	10			10	0.8497	0.84879		10	
	43	3	10210	10			10	0.83479	0.83364		10	
	44	4	10210	10			10	0.83737	0.83617		10	
	45	5	10210	10			9	0.84087	0.83965		9	
	46	6	10210	10			8	0.84405	0.84273		8	
	47	7	10210	10			7	0.83795	0.8372		7	
	48	8	10210	10			9	0.83938	0.83777		9	
	49	1	10212	10			8	0.84064	0.839		8	
	50	2	10212	10			8	0.84523	0.8437		8	
	51	3	10212	10			8	0.84077	0.83954		8	
	52	4	10212	10			9	0.83919	0.83772		9	
	53	5	10212	10			10	0.84529	0.84294		10	

Test: EPA 100.1M-Hyalella azteca 28d Survival and Growth T Test ID: 2290haref
Species: HA-Hyalella azteca Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST Sample Type:
Start Date: 11/4/2014 End Date: 12/2/2014 Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0-	Day 4	Day 1(	Day 2(	Total Weight	Pan weight	Weigh	Weight Ct 28-	Notes
	54	6	10212	10			10	0.85356	0.852		10	
	55	7	10212	10			9	0.84285	0.84096		9	
	56	8	10212	10			9	0.84927	0.84734		9	
	57	1	10213	10			8	0.83905	0.83752		8	
	58	2	10213	10			9	0.84455	0.84286		9	
	59	3	10213	10			9	0.84384	0.84221		9	
	60	4	10213	10			9	0.84656	0.8445		9	
	61	5	10213	10			10	0.84187	0.83901		10	
	62	6	10213	10			9	0.84146	0.83915		9	
	63	7	10213	10			8	0.839	0.83802		8	
	64	8	10213	10			8	0.8415	0.84058		8	
	65	1	10214	10			10	0.84031	0.8388		10	
	66	2	10214	10			10	0.841	0.83948		10	
	67	3	10214	10			8	0.84682	0.84533		8	
	68	4	10214	10			7	0.848	0.84688		7	
	69	5	10214	10			9	0.84771	0.84619		9	
	70	6	10214	10			7	0.84061	0.83958		7	
	71	7	10214	10			9	0.84761	0.8457		9	
	72	8	10214	10			10	0.83776	0.8362		10	
	73	1	10215	10			10	0.83895	0.83784		10	
	74	2	10215	10			9	0.85191	0.8506		9	
	75	3	10215	10			10	0.8417	0.8406		10	
	76	4	10215	10			10	0.84084	0.8397		10	
	77	5	10215	10			9	0.84412	0.84252		9	
	78	6	10215	10			10	0.83631	0.83491		10	
	79	7	10215	10			9	0.84774	0.84668		9	
	80	8	10215	10			10	0.8381	0.8368		10	
	81	1	10216	10			9	0.84091	0.83914		9	
	82	2	10216	10			10	0.84736	0.84546		10	
	83	3	10216	10			10	0.84892	0.84737		10	
	84	4	10216	10			10	0.84758	0.84614		10	
	85	5	10216	10			10	0.8384	0.83658		10	
	86	6	10216	10			9	0.84221	0.84057		9	
	87	7	10216	10			9	0.85352	0.85173		9	
	88	8	10216	10			9	0.84581	0.84391		9	
	89	1	10217	10			10	0.85105	0.84931		10	
	90	2	10217	10			10	0.85029	0.84886		10	
	91	3	10217	10			9	0.83648	0.8354		9	
	92	4	10217	10			10	0.84089	0.83931		10	
	93	5	10217	10			9	0.84394	0.84227		9	
	94	6	10217	10			9	0.84976	0.84816		9	
	95	7	10217	10			10	0.84148	0.84017		10	
	96	8	10217	10			10	0.83968	0.83799		10	
	97	1	10218	10			3	0.83952	0.83815		3	
	98	2	10218	10			5	0.84242	0.84062		5	
	99	3	10218	10			4	0.84878	0.84675		4	
	100	4	10218	10			4	0.84549	0.84375		4	
	101	5	10218	10			7	0.83708	0.83563		7	
	102	6	10218	10			5	0.84909	0.8472		5	
	103	7	10218	10			8	0.84303	0.84124		8	
	104	8	10218	10			4	0.8451	0.84225		4	
	105	1	10219	10			9	0.84243	0.84071		9	
	106	2	10219	10			10	0.8352	0.83417		10	

Test: EPA 100.1M-Hyalella azteca 28d Survival and Growth T Test ID: 2290haref
Species: HA-Hyalella azteca Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST Sample Type:
Start Date: 11/4/2014 End Date: 12/2/2014 Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0-	Day 4	Day 1	Day 28	Total Weight	Pan weight	Weigh	Weight Ct 28-	Notes
	107	3	10219	10			7	0.83842	0.83732		7	
	108	4	10219	10			9	0.83826	0.83681		9	
	109	5	10219	10			10	0.83422	0.8323		10	
	110	6	10219	10			10	0.83976	0.83854		10	
	111	7	10219	10			7	0.84301	0.8417		7	
	112	8	10219	10			8	0.84249	0.84103		8	
	113	1	10220	10			10	0.84711	0.84547		10	
	114	2	10220	10			9	0.84216	0.84075		9	
	115	3	10220	10			10	0.84232	0.841		10	
	116	4	10220	10			10	0.83722	0.83614		10	
	117	5	10220	10			7	0.83557	0.8344		7	
	118	6	10220	10			10	0.83477	0.83313		10	
	119	7	10220	10			8	0.83875	0.8372		8	
	120	8	10220	10			10	0.83901	0.83722		10	
	121	1	10221	10			9	0.84647	0.84493		9	
	122	2	10221	10			7	0.83967	0.83887		7	
	123	3	10221	10			8	0.83954	0.83812		8	
	124	4	10221	10			10	0.84746	0.84606		10	
	125	5	10221	10			10	0.83936	0.8379		10	
	126	6	10221	10			8	0.83885	0.83808		8	
	127	7	10221	10			8	0.84283	0.84142		8	
	128	8	10221	10			7	0.84373	0.8421		7	
	129	1	10223	10			10	0.84141	0.83974		10	
	130	2	10223	10			8	0.84429	0.84312		8	
	131	3	10223	10			7	0.83979	0.8384		7	
	132	4	10223	10			10	0.84139	0.83955		10	
	133	5	10223	10			9	0.83856	0.83712		9	
	134	6	10223	10			10	0.84006	0.83831		10	
	135	7	10223	10			10	0.83339	0.83157		10	
	136	8	10223	10			10	0.84211	0.84022		10	
	137	1	10224	10			9	0.83863	0.836		9	
	138	2	10224	10			10	0.84026	0.83781		10	
	139	3	10224	10			10	0.84156	0.83982		10	
	140	4	10224	10			8	0.84774	0.84559		8	
	141	5	10224	10			10	0.85061	0.84833		10	
	142	6	10224	10			10	0.85272	0.85063		10	
	143	7	10224	10			10	0.83786	0.83585		10	
	144	8	10224	10			9	0.8515	0.84891		9	
	145	1	10225	10			9	0.84294	0.84126		9	
	146	2	10225	10			10	0.834	0.8321		10	
	147	3	10225	10			10	0.84524	0.84373		10	
	148	4	10225	10			9	0.84699	0.8453		9	
	149	5	10225	10			8	0.84182	0.84066		8	
	150	6	10225	10			9	0.83874	0.837		9	
	151	7	10225	10			10	0.84596	0.8435		10	
	152	8	10225	10			10	0.8416	0.8399		10	
	153	1	10226	10			10	0.84558	0.844		10	
	154	2	10226	10			8	0.83862	0.83738		8	
	155	3	10226	10			8	0.83952	0.83801		8	
	156	4	10226	10			8	0.8441	0.84284		8	
	157	5	10226	10			10	0.83869	0.8375		10	
	158	6	10226	10			9	0.84078	0.83965		9	
	159	7	10226	10			10	0.84185	0.84049		10	

Test: EPA 100.1M-Hyalella azteca 28d Survival and Growth T Test ID: 2290haref
Species: HA-Hyalella azteca Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST Sample Type:
Start Date: 11/4/2014 End Date: 12/2/2014 Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Day 0-	Day 4	Day 1	Day 2	Total Weight	Pan weight	Weigh	Weight Ct 28-	Notes
	160	8	10226	10			9	0.84352	0.8417		9	
	161	1	10256	10			10	0.84541	0.8438		10	
	162	2	10256	10			9	0.83882	0.8376		9	
	163	3	10256	10			9	0.83776	0.83661		9	
	164	4	10256	10			9	0.83751	0.8364		9	
	165	5	10256	10			9	0.83773	0.83656		9	
	166	6	10256	10			10	0.84661	0.84543		10	
	167	7	10256	10			10	0.84765	0.84631		10	
	168	8	10256	10			10	0.83852	0.83683		10	

Comments: Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102

Hyalella azteca 28d Survival and Growth Test-28-Day Survival

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0000	1.0000	1.0000	0.7000	1.0000	1.0000	0.8000	1.0000
10254-10254	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000
10207	0.8000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000
10208	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000
10209	0.9000	0.9000	0.9000	1.0000	0.8000	0.9000	1.0000	0.8000
10210	0.7000	1.0000	1.0000	1.0000	0.9000	0.8000	0.7000	0.9000
10212	0.8000	0.8000	0.8000	0.9000	1.0000	1.0000	0.9000	0.9000
10213	0.8000	0.9000	0.9000	0.9000	1.0000	0.9000	0.8000	0.8000
10214	1.0000	1.0000	0.8000	0.7000	0.9000	0.7000	0.9000	1.0000
10215	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	0.9000	1.0000
10216	0.9000	1.0000	1.0000	1.0000	1.0000	0.9000	0.9000	0.9000
10217	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	1.0000	1.0000
10218	0.3000	0.5000	0.4000	0.4000	0.7000	0.5000	0.8000	0.4000
10219	0.9000	1.0000	0.7000	0.9000	1.0000	1.0000	0.7000	0.8000
10220	1.0000	0.9000	1.0000	1.0000	0.7000	1.0000	0.8000	1.0000
10221	0.9000	0.7000	0.8000	1.0000	1.0000	0.8000	0.8000	0.7000
10223	1.0000	0.8000	0.7000	1.0000	0.9000	1.0000	1.0000	1.0000
10224	0.9000	1.0000	1.0000	0.8000	1.0000	1.0000	1.0000	0.9000
10225	0.9000	1.0000	1.0000	0.9000	0.8000	0.9000	1.0000	1.0000
10226	1.0000	0.8000	0.8000	0.8000	1.0000	0.9000	1.0000	0.9000
10256	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9375	0.9868	1.3213	0.9912	1.4120	12.927	8	*		
10254-10254	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8			
10207	0.9250	0.9737	1.2924	1.1071	1.4120	8.514	8	0.402	1.761	0.1265
10208	0.9375	0.9868	1.3102	1.2490	1.4120	6.438	8	0.165	1.761	0.1186
10209	0.9000	0.9474	1.2543	1.1071	1.4120	9.198	8	0.919	1.761	0.1284
10210	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.061	1.761	0.1550
10212	0.8875	0.9342	1.2366	1.1071	1.4120	10.242	8	1.127	1.761	0.1324
10213	0.8750	0.9211	1.2162	1.1071	1.4120	8.698	8	1.479	1.761	0.1251
10214	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.061	1.761	0.1550
10215	0.9625	1.0132	1.3509	1.2490	1.4120	6.244	8	-0.440	1.761	0.1186
10216	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8	-0.136	1.761	0.1194
10217	0.9625	1.0132	1.3509	1.2490	1.4120	6.244	8	-0.440	1.761	0.1186
*10218	0.5000	0.5263	0.7879	0.5796	1.1071	22.428	8	6.139	1.761	0.1530
10219	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.061	1.761	0.1550
10220	0.9250	0.9737	1.3009	0.9912	1.4120	12.925	8	0.240	1.761	0.1493
10221	0.8375	0.8816	1.1721	0.9912	1.4120	14.391	8	1.758	1.761	0.1495
10223	0.9250	0.9737	1.3009	0.9912	1.4120	12.925	8	0.240	1.761	0.1493
10224	0.9500	1.0000	1.3332	1.1071	1.4120	8.799	8	-0.162	1.761	0.1290
10225	0.9375	0.9868	1.3128	1.1071	1.4120	8.821	8	0.117	1.761	0.1285
10226	0.9000	0.9474	1.2569	1.1071	1.4120	11.234	8	0.821	1.761	0.1380
10256	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8	-0.136	1.761	0.1194

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.59437	1.035	-0.281	-0.5117
Bartlett's Test indicates equal variances (p = 0.34)	20.9947	30.1435		
The control means are not significantly different (p = 0.89)	0.13617	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences Treatments vs 1031-10222	0.06905	0.07354	0.11847	0.019	2.5E-11	19, 140

Hyalella azteca 28d Survival and Growth Test-28-day Average Growth

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	0.1460	0.1410	0.1470	0.1743	0.1880	0.1520	0.1800	0.1540
10254-10254	0.2030	0.1640	0.1656	0.2010	0.1478	0.2567	0.1870	0.2089
10207	0.1175	0.1360	0.1080	0.1022	0.1200	0.0967	0.1180	0.1367
10208	0.1630	0.1630	0.1456	0.1280	0.1689	0.1367	0.1744	0.2056
10209	0.1056	0.1400	0.1456	0.2110	0.1788	0.1533	0.1300	0.1662
10210	0.1286	0.0910	0.1150	0.1200	0.1356	0.1650	0.1071	0.1789
10212	0.2050	0.1913	0.1538	0.1633	0.2350	0.1560	0.2100	0.2144
10213	0.1912	0.1878	0.1811	0.2289	0.2860	0.2567	0.1225	0.1150
10214	0.1510	0.1520	0.1862	0.1600	0.1689	0.1471	0.2122	0.1560
10215	0.1110	0.1456	0.1100	0.1140	0.1778	0.1400	0.1178	0.1300
10216	0.1967	0.1900	0.1550	0.1440	0.1820	0.1822	0.1989	0.2111
10217	0.1740	0.1430	0.1200	0.1580	0.1856	0.1778	0.1310	0.1690
10218	0.4567	0.3600	0.5075	0.4350	0.2071	0.3780	0.2237	0.7125
10219	0.1911	0.1030	0.1571	0.1611	0.1920	0.1220	0.1871	0.1825
10220	0.1640	0.1567	0.1320	0.1080	0.1671	0.1640	0.1937	0.1790
10221	0.1711	0.1143	0.1775	0.1400	0.1460	0.0962	0.1763	0.2329
10223	0.1670	0.1463	0.1986	0.1840	0.1600	0.1750	0.1820	0.1890
10224	0.2922	0.2450	0.1740	0.2688	0.2280	0.2090	0.2010	0.2878
10225	0.1867	0.1900	0.1510	0.1878	0.1450	0.1933	0.2460	0.1700
10226	0.1580	0.1550	0.1888	0.1575	0.1190	0.1256	0.1360	0.2022
10256	0.1610	0.1356	0.1278	0.1233	0.1300	0.1180	0.1340	0.1690

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.1603	0.8360	0.1603	0.1410	0.1880	11.094	8			
10254-10254	0.1917	1.0000	0.1917	0.1478	0.2567	17.777	8			
*10207	0.1169	0.6096	0.1169	0.0967	0.1367	12.401	8	5.351	1.771	0.0144
10208	0.1606	0.8378	0.1606	0.1280	0.2056	15.166	8	-0.033	1.782	0.0190
10209	0.1538	0.8022	0.1538	0.1056	0.2110	20.855	8	0.500	1.812	0.0235
*10210	0.1301	0.6788	0.1301	0.0910	0.1789	22.526	8	2.486	1.796	0.0218
10212	0.1911	0.9967	0.1911	0.1538	0.2350	15.848	8	-2.481	1.796	0.0223
10213	0.1961	1.0230	0.1961	0.1150	0.2860	30.551	8	-1.623	1.860	0.0411
10214	0.1667	0.8694	0.1667	0.1471	0.2122	13.345	8	-0.636	1.771	0.0178
*10215	0.1308	0.6820	0.1308	0.1100	0.1778	17.786	8	2.852	1.771	0.0183
10216	0.1825	0.9518	0.1825	0.1440	0.2111	12.398	8	-2.182	1.771	0.0180
10217	0.1573	0.8204	0.1573	0.1200	0.1856	15.048	8	0.286	1.782	0.0187
10218	0.4101	2.1387	0.4101	0.2071	0.7125	39.449	8	-4.341	1.895	0.1090
10219	0.1620	0.8449	0.1620	0.1030	0.1920	20.744	8	-0.128	1.812	0.0244
10220	0.1581	0.8244	0.1581	0.1080	0.1937	16.996	8	0.195	1.782	0.0203
10221	0.1568	0.8177	0.1568	0.0962	0.2329	27.135	8	0.215	1.833	0.0299
10223	0.1752	0.9139	0.1752	0.1463	0.1986	9.639	8	-1.723	1.771	0.0154
10224	0.2382	1.2424	0.2382	0.1740	0.2922	17.963	8	-4.757	1.833	0.0300
10225	0.1837	0.9582	0.1837	0.1450	0.2460	16.957	8	-1.848	1.796	0.0228
10226	0.1553	0.8097	0.1553	0.1190	0.2022	18.712	8	0.418	1.796	0.0216
*10256	0.1373	0.7163	0.1373	0.1180	0.1690	13.176	8	2.559	1.771	0.0159

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.45527	1.035	1.06608	17.6144
Bartlett's Test indicates unequal variances (p = 1.56E-17)	124.542	30.1435		
The control means are significantly different (p = 0.04)	2.31387	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.01588	0.0991	0.03001	0.00219	2.0E-23	19, 140
Treatments vs 1031-10222						

 ToxCalc v5.0.32 Reviewed by: MLV

Hyalella azteca 28d Survival and Growth Test-28-Day Biomass

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	0.1460	0.1410	0.1470	0.1220	0.1880	0.1520	0.1440	0.1540
10254-10254	0.2030	0.1640	0.1490	0.2010	0.1330	0.2310	0.1870	0.1880
10207	0.0940	0.1360	0.1080	0.0920	0.1080	0.0870	0.1180	0.1230
10208	0.1630	0.1630	0.1310	0.1280	0.1520	0.1230	0.1570	0.1850
10209	0.0950	0.1260	0.1310	0.2110	0.1430	0.1380	0.1300	0.1330
10210	0.0900	0.0910	0.1150	0.1200	0.1220	0.1320	0.0750	0.1610
10212	0.1640	0.1530	0.1230	0.1470	0.2350	0.1560	0.1890	0.1930
10213	0.1530	0.1690	0.1630	0.2060	0.2860	0.2310	0.0980	0.0920
10214	0.1510	0.1520	0.1490	0.1120	0.1520	0.1030	0.1910	0.1560
10215	0.1110	0.1310	0.1100	0.1140	0.1600	0.1400	0.1060	0.1300
10216	0.1770	0.1900	0.1550	0.1440	0.1820	0.1640	0.1790	0.1900
10217	0.1740	0.1430	0.1080	0.1580	0.1670	0.1600	0.1310	0.1690
10218	0.1370	0.1800	0.2030	0.1740	0.1450	0.1890	0.1790	0.2850
10219	0.1720	0.1030	0.1100	0.1450	0.1920	0.1220	0.1310	0.1460
10220	0.1640	0.1410	0.1320	0.1080	0.1170	0.1640	0.1550	0.1790
10221	0.1540	0.0800	0.1420	0.1400	0.1460	0.0770	0.1410	0.1630
10223	0.1670	0.1170	0.1390	0.1840	0.1440	0.1750	0.1820	0.1890
10224	0.2630	0.2450	0.1740	0.2150	0.2280	0.2090	0.2010	0.2590
10225	0.1680	0.1900	0.1510	0.1690	0.1160	0.1740	0.2460	0.1700
10226	0.1580	0.1240	0.1510	0.1260	0.1190	0.1130	0.1360	0.1820
10256	0.1610	0.1220	0.1150	0.1110	0.1170	0.1180	0.1340	0.1690

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.1492	0.8201	0.1492	0.1220	0.1880	12.369	8	*		
10254-10254	0.1820	1.0000	0.1820	0.1330	0.2310	17.472	8			
*10207	0.1083	0.5948	0.1083	0.0870	0.1360	15.621	8	4.632	1.771	0.0157
10208	0.1503	0.8255	0.1503	0.1230	0.1850	14.207	8	-0.100	1.771	0.0177
10209	0.1384	0.7603	0.1384	0.0950	0.2110	23.630	8	0.819	1.796	0.0238
*10210	0.1132	0.6223	0.1132	0.0750	0.1610	24.195	8	3.082	1.782	0.0208
10212	0.1700	0.9341	0.1700	0.1230	0.2350	20.346	8	-1.497	1.812	0.0251
10213	0.1747	0.9602	0.1747	0.0920	0.2860	37.399	8	-1.062	1.860	0.0446
10214	0.1457	0.8008	0.1457	0.1030	0.1910	18.764	8	0.300	1.782	0.0208
*10215	0.1252	0.6882	0.1252	0.1060	0.1600	14.825	8	2.593	1.771	0.0164
10216	0.1726	0.9485	0.1726	0.1440	0.1900	9.683	8	-2.655	1.771	0.0156
10217	0.1513	0.8310	0.1513	0.1080	0.1740	14.892	8	-0.194	1.771	0.0182
10218	0.1865	1.0247	0.1865	0.1370	0.2850	24.326	8	-2.151	1.833	0.0317
10219	0.1401	0.7699	0.1401	0.1030	0.1920	21.684	8	0.726	1.796	0.0226
10220	0.1450	0.7967	0.1450	0.1080	0.1790	17.125	8	0.389	1.782	0.0195
10221	0.1304	0.7163	0.1304	0.0770	0.1630	25.263	8	1.414	1.796	0.0240
10223	0.1621	0.8908	0.1621	0.1170	0.1890	15.957	8	-1.146	1.782	0.0200
10224	0.2243	1.2321	0.2243	0.1740	0.2630	13.628	8	-5.942	1.796	0.0227
10225	0.1730	0.9505	0.1730	0.1160	0.2460	21.184	8	-1.637	1.812	0.0263
10226	0.1386	0.7617	0.1386	0.1130	0.1820	16.878	8	1.008	1.771	0.0187
*10256	0.1309	0.7191	0.1309	0.1110	0.1690	16.975	8	1.799	1.771	0.0181

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.89606	1.035	0.49354	1.91603
Bartlett's Test indicates unequal variances (p = 0.02)	34.3012	30.1435		
The control means are significantly different (p = 0.02)	2.5193	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences Treatments vs 1031-10222	0.01809	0.12118	0.00584	0.00095	3.3E-11	19, 140

ToxCalc v5.0.32

Reviewed by: MLV

Appendix D3
Hyalella azteca
28-Day Statistical Data
Reference Sediment SS-1041-AT

- Survival
- Weight

Hyalella azteca 28d Survival and Growth Test-28-Day Survival

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	1.0000	1.0000	1.0000	0.7000	1.0000	1.0000	0.8000	1.0000
10254-10254	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000
10207	0.8000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000
10208	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000
10209	0.9000	0.9000	0.9000	1.0000	0.8000	0.9000	1.0000	0.8000
10210	0.7000	1.0000	1.0000	1.0000	0.9000	0.8000	0.7000	0.9000
10212	0.8000	0.8000	0.8000	0.9000	1.0000	1.0000	0.9000	0.9000
10213	0.8000	0.9000	0.9000	0.9000	1.0000	0.9000	0.8000	0.8000
10214	1.0000	1.0000	0.8000	0.7000	0.9000	0.7000	0.9000	1.0000
10215	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	0.9000	1.0000
10216	0.9000	1.0000	1.0000	1.0000	1.0000	0.9000	0.9000	0.9000
10217	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	1.0000	1.0000
10218	0.3000	0.5000	0.4000	0.4000	0.7000	0.5000	0.8000	0.4000
10219	0.9000	1.0000	0.7000	0.9000	1.0000	1.0000	0.7000	0.8000
10220	1.0000	0.9000	1.0000	1.0000	0.7000	1.0000	0.8000	1.0000
10221	0.9000	0.7000	0.8000	1.0000	1.0000	0.8000	0.8000	0.7000
10223	1.0000	0.8000	0.7000	1.0000	0.9000	1.0000	1.0000	1.0000
10224	0.9000	1.0000	1.0000	0.8000	1.0000	1.0000	1.0000	0.9000
10225	0.9000	1.0000	1.0000	0.9000	0.8000	0.9000	1.0000	1.0000
10226	1.0000	0.8000	0.8000	0.8000	1.0000	0.9000	1.0000	0.9000
10256	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.9375	0.9868	1.3213	0.9912	1.4120	12.927	8			
10254-10254	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8	*		
10207	0.9250	0.9737	1.2924	1.1071	1.4120	8.514	8	0.768	1.761	0.0874
10208	0.9375	0.9868	1.3102	1.2490	1.4120	6.438	8	0.475	1.761	0.0755
10209	0.9000	0.9474	1.2543	1.1071	1.4120	9.198	8	1.491	1.761	0.0900
10210	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.445	1.761	0.1251
10212	0.8875	0.9342	1.2366	1.1071	1.4120	10.242	8	1.729	1.761	0.0957
*10213	0.8750	0.9211	1.2162	1.1071	1.4120	8.698	8	2.360	1.761	0.0853
10214	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.445	1.761	0.1251
10215	0.9625	1.0132	1.3509	1.2490	1.4120	6.244	8	-0.475	1.761	0.0755
10216	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8	0.000	1.761	0.0767
10217	0.9625	1.0132	1.3509	1.2490	1.4120	6.244	8	-0.475	1.761	0.0755
*10218	0.5000	0.5263	0.7879	0.5796	1.1071	22.428	8	7.791	1.761	0.1227
10219	0.8750	0.9211	1.2280	0.9912	1.4120	14.738	8	1.445	1.761	0.1251
10220	0.9250	0.9737	1.3009	0.9912	1.4120	12.925	8	0.442	1.761	0.1179
*10221	0.8375	0.8816	1.1721	0.9912	1.4120	14.391	8	2.360	1.761	0.1182
10223	0.9250	0.9737	1.3009	0.9912	1.4120	12.925	8	0.442	1.761	0.1179
10224	0.9500	1.0000	1.3332	1.1071	1.4120	8.799	8	-0.051	1.761	0.0910
10225	0.9375	0.9868	1.3128	1.1071	1.4120	8.821	8	0.346	1.761	0.0902
10226	0.9000	0.9474	1.2569	1.1071	1.4120	11.234	8	1.254	1.761	0.1033
10256	0.9500	1.0000	1.3305	1.2490	1.4120	6.547	8	0.000	1.761	0.0767

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.49892	1.035	-0.1739	-0.5641
Bartlett's Test indicates equal variances (p = 0.28)	22.1731	30.1435		
The control means are not significantly different (p = 0.89)	0.13617	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences Treatments vs 10254-10254	0.04053	0.04296	0.119	0.01792	4.1E-12	19, 140

ToxCalc v5.0.32

Reviewed by: MLV

Hyalella azteca 28d Survival and Growth Test-28-day Average Growth

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	0.1460	0.1410	0.1470	0.1743	0.1880	0.1520	0.1800	0.1540
10254-10254	0.2030	0.1640	0.1656	0.2010	0.1478	0.2567	0.1870	0.2089
10207	0.1175	0.1360	0.1080	0.1022	0.1200	0.0967	0.1180	0.1367
10208	0.1630	0.1630	0.1456	0.1280	0.1689	0.1367	0.1744	0.2056
10209	0.1056	0.1400	0.1456	0.2110	0.1788	0.1533	0.1300	0.1662
10210	0.1286	0.0910	0.1150	0.1200	0.1356	0.1650	0.1071	0.1789
10212	0.2050	0.1913	0.1538	0.1633	0.2350	0.1560	0.2100	0.2144
10213	0.1912	0.1878	0.1811	0.2289	0.2860	0.2567	0.1225	0.1150
10214	0.1510	0.1520	0.1862	0.1600	0.1689	0.1471	0.2122	0.1560
10215	0.1110	0.1456	0.1100	0.1140	0.1778	0.1400	0.1178	0.1300
10216	0.1967	0.1900	0.1550	0.1440	0.1820	0.1822	0.1989	0.2111
10217	0.1740	0.1430	0.1200	0.1580	0.1856	0.1778	0.1310	0.1690
10218	0.4567	0.3600	0.5075	0.4350	0.2071	0.3780	0.2237	0.7125
10219	0.1911	0.1030	0.1571	0.1611	0.1920	0.1220	0.1871	0.1825
10220	0.1640	0.1567	0.1320	0.1080	0.1671	0.1640	0.1937	0.1790
10221	0.1711	0.1143	0.1775	0.1400	0.1460	0.0962	0.1763	0.2329
10223	0.1670	0.1463	0.1986	0.1840	0.1600	0.1750	0.1820	0.1890
10224	0.2922	0.2450	0.1740	0.2688	0.2280	0.2090	0.2010	0.2878
10225	0.1867	0.1900	0.1510	0.1878	0.1450	0.1933	0.2460	0.1700
10226	0.1580	0.1550	0.1888	0.1575	0.1190	0.1256	0.1360	0.2022
10256	0.1610	0.1356	0.1278	0.1233	0.1300	0.1180	0.1340	0.1690

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.1603	0.8360	0.1603	0.1410	0.1880	11.094	8			
10254-10254	0.1917	1.0000	0.1917	0.1478	0.2567	17.777	8	*		
*10207	0.1169	0.6096	0.1169	0.0967	0.1367	12.401	8	5.716	1.833	0.0240
*10208	0.1606	0.8378	0.1606	0.1280	0.2056	15.166	8	2.099	1.782	0.0264
*10209	0.1538	0.8022	0.1538	0.1056	0.2110	20.855	8	2.292	1.771	0.0293
*10210	0.1301	0.6788	0.1301	0.0910	0.1789	22.526	8	3.875	1.771	0.0281
10212	0.1911	0.9967	0.1911	0.1538	0.2350	15.848	8	0.040	1.771	0.0285
10213	0.1961	1.0230	0.1961	0.1150	0.2860	30.551	8	-0.181	1.796	0.0438
10214	0.1667	0.8694	0.1667	0.1471	0.2122	13.345	8	1.741	1.782	0.0256
*10215	0.1308	0.6820	0.1308	0.1100	0.1778	17.786	8	4.179	1.782	0.0260
10216	0.1825	0.9518	0.1825	0.1440	0.2111	12.398	8	0.640	1.782	0.0258
*10217	0.1573	0.8204	0.1573	0.1200	0.1856	15.048	8	2.348	1.782	0.0261
10218	0.4101	2.1387	0.4101	0.2071	0.7125	39.449	8	-3.735	1.895	0.1107
10219	0.1620	0.8449	0.1620	0.1030	0.1920	20.744	8	1.757	1.771	0.0300
*10220	0.1581	0.8244	0.1581	0.1080	0.1937	16.996	8	2.194	1.771	0.0272
*10221	0.1568	0.8177	0.1568	0.0962	0.2329	27.135	8	1.814	1.771	0.0341
10223	0.1752	0.9139	0.1752	0.1463	0.1986	9.639	8	1.227	1.812	0.0244
10224	0.2382	1.2424	0.2382	0.1740	0.2922	17.963	8	-2.403	1.771	0.0343
10225	0.1837	0.9582	0.1837	0.1450	0.2460	16.957	8	0.491	1.771	0.0289
*10226	0.1553	0.8097	0.1553	0.1190	0.2022	18.712	8	2.304	1.771	0.0280
*10256	0.1373	0.7163	0.1373	0.1180	0.1690	13.176	8	3.987	1.812	0.0247

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.47881	1.035	1.04601	16.8741
Bartlett's Test indicates unequal variances (p = 2.19E-16)	118.421	30.1435		
The control means are significantly different (p = 0.04)	2.31387	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences Treatments vs 10254-10254	0.02473	0.12897	0.02998	0.00223	4.8E-23	19, 140

 ToxCalc v5.0.32 Reviewed by: MLV

Hyalella azteca 28d Survival and Growth Test-28-Day Biomass

Start Date:	11/4/2014	Test ID:	2290haref	Sample ID:	STANTEC ST
End Date:	12/2/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	HA-Hyalella azteca
Comments:	Stantec St. Louis 2014 28 day H. azteca survival and growth 10207-102				

Conc-%	1	2	3	4	5	6	7	8
1031-10222	0.1460	0.1410	0.1470	0.1220	0.1880	0.1520	0.1440	0.1540
1041-10254	0.2030	0.1640	0.1490	0.2010	0.1330	0.2310	0.1870	0.1880
10207	0.0940	0.1360	0.1080	0.0920	0.1080	0.0870	0.1180	0.1230
10208	0.1630	0.1630	0.1310	0.1280	0.1520	0.1230	0.1570	0.1850
10209	0.0950	0.1260	0.1310	0.2110	0.1430	0.1380	0.1300	0.1330
10210	0.0900	0.0910	0.1150	0.1200	0.1220	0.1320	0.0750	0.1610
10212	0.1640	0.1530	0.1230	0.1470	0.2350	0.1560	0.1890	0.1930
10213	0.1530	0.1690	0.1630	0.2060	0.2860	0.2310	0.0980	0.0920
10214	0.1510	0.1520	0.1490	0.1120	0.1520	0.1030	0.1910	0.1560
10215	0.1110	0.1310	0.1100	0.1140	0.1600	0.1400	0.1060	0.1300
10216	0.1770	0.1900	0.1550	0.1440	0.1820	0.1640	0.1790	0.1900
10217	0.1740	0.1430	0.1080	0.1580	0.1670	0.1600	0.1310	0.1690
10218	0.1370	0.1800	0.2030	0.1740	0.1450	0.1890	0.1790	0.2850
10219	0.1720	0.1030	0.1100	0.1450	0.1920	0.1220	0.1310	0.1460
10220	0.1640	0.1410	0.1320	0.1080	0.1170	0.1640	0.1550	0.1790
10221	0.1540	0.0800	0.1420	0.1400	0.1460	0.0770	0.1410	0.1630
10223	0.1670	0.1170	0.1390	0.1840	0.1440	0.1750	0.1820	0.1890
10224	0.2630	0.2450	0.1740	0.2150	0.2280	0.2090	0.2010	0.2590
10225	0.1680	0.1900	0.1510	0.1690	0.1160	0.1740	0.2460	0.1700
10226	0.1580	0.1240	0.1510	0.1260	0.1190	0.1130	0.1360	0.1820
10256	0.1610	0.1220	0.1150	0.1110	0.1170	0.1180	0.1340	0.1690

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
1031-10222	0.1492	0.8201	0.1492	0.1220	0.1880	12.369	8			
1041-10254	0.1820	1.0000	0.1820	0.1330	0.2310	17.472	8	*		
*10207	0.1083	0.5948	0.1083	0.0870	0.1360	15.621	8	5.792	1.812	0.0231
*10208	0.1503	0.8255	0.1503	0.1230	0.1850	14.207	8	2.345	1.782	0.0241
*10209	0.1384	0.7603	0.1384	0.0950	0.2110	23.630	8	2.705	1.771	0.0286
*10210	0.1132	0.6223	0.1132	0.0750	0.1610	24.195	8	4.633	1.771	0.0263
10212	0.1700	0.9341	0.1700	0.1230	0.2350	20.346	8	0.722	1.771	0.0294
10213	0.1747	0.9602	0.1747	0.0920	0.2860	37.399	8	0.282	1.812	0.0466
*10214	0.1457	0.8008	0.1457	0.1030	0.1910	18.764	8	2.445	1.771	0.0263
*10215	0.1252	0.6882	0.1252	0.1060	0.1600	14.825	8	4.359	1.796	0.0234
10216	0.1726	0.9485	0.1726	0.1440	0.1900	9.683	8	0.738	1.812	0.0230
*10217	0.1513	0.8310	0.1513	0.1080	0.1740	14.892	8	2.232	1.782	0.0246
10218	0.1865	1.0247	0.1865	0.1370	0.2850	24.326	8	-0.230	1.782	0.0349
*10219	0.1401	0.7699	0.1401	0.1030	0.1920	21.684	8	2.693	1.771	0.0275
*10220	0.1450	0.7967	0.1450	0.1080	0.1790	17.125	8	2.594	1.771	0.0253
*10221	0.1304	0.7163	0.1304	0.0770	0.1630	25.263	8	3.189	1.771	0.0287
10223	0.1621	0.8908	0.1621	0.1170	0.1890	15.957	8	1.371	1.771	0.0257
10224	0.2243	1.2321	0.2243	0.1740	0.2630	13.628	8	-2.710	1.771	0.0276
10225	0.1730	0.9505	0.1730	0.1160	0.2460	21.184	8	0.525	1.771	0.0304
*10226	0.1386	0.7617	0.1386	0.1130	0.1820	16.878	8	3.108	1.782	0.0249
*10256	0.1309	0.7191	0.1309	0.1110	0.1690	16.975	8	3.728	1.782	0.0244

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.87078	1.035	0.45268	1.67222
Bartlett's Test indicates unequal variances (p = 0.03)	31.6932	30.1435		
The control means are significantly different (p = 0.02)	2.5193	2.14479		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.02444	0.1343	0.00621	0.00098	1.6E-11	19, 140
Treatments vs 1041-10254						

ToxCalc v5.0.32

Reviewed by: ML✓

Appendix E
Lumbriculus variegatus
4-Day Bench Sheets

- Survival
- Statistical Data

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	Control	Test Photoperiod:	16:8
Sample ID:	CS #123	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali, Blackworm CO, 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	830 MW renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
MDS 755 chemistries time/Initial		Screens Cleaned:	☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	N/A MW	4 MW	4	Init: MW
1	23.1	7.74	3.2	306	156	124	0.63	9
2	22.9	7.75	3.4	307	end: 5.0	end: 6.4		9
3					start: 1.1	start: 0.2		10
4					Titrant used (mL): 3.9	Titrant used (mL): 6.2		10
—					Sample volume (mL): 25	Sample volume (mL): 50		—

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: ML ✓

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10207	Test Photoperiod:	16:8
Sample ID:	SS 1022-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali, Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
RDS 755 chemistrics time/Initial

Number Daily Renewals: 1
0830 nw renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	N/A	—	—	Init: nw
1	22.9	7.69	5.2	298.1	T.E.*	T.E.*	T.E.*	10
2	22.8	7.78	5.7	310	end:	end:		10
3					start:	start:		10
4					Titrant used (mL):	Titrant used (mL):		10
					Sample volume (mL):	Sample volume (mL):		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

*T.E. Tech spilled sample - nw 10/7/14

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10208	Test Photoperiod:	16:8
Sample ID:	SS 1024-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	X 830 renewal time/Initials	renewal
Overlying Water:	Dechlor	renewal time/Initials	renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
RDS 755	chemistries time/Initial	Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	N/A	4	4	Init:
1	22.7	7.65	6.0	310	140	100	0.13 J	10
2	22.8	7.64	5.6	311	end: 8.5	end: 11.7		10
3					start: 5.0	start: 6.7		10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.0		9
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10209	Test Photoperiod:	16:8
Sample ID:	SS 1032-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO, 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
@DS 755 chemistries time/Initial

Number Daily Renewals: 1
~~830~~ MWW renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	MWW N/A	MWW 4	4	Init: MWW
1	22.9	7.69	6.7	298.9	132	~~100~~ 100	0.14J	9
2	23.0	7.76	6.7	303	end: 11.8	end: 16.7		10
3					start: 8.5	start: 11.7		10
4					Titrant used (mL): 3.3	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Amp all
Ind 24.8
Stew 21.8
50

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10210	Test Photoperiod:	16:8
Sample ID:	SS 1021-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	)
Date:	10/7/2014	~~X~~830 nw renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
ADS 755 chemistries time/Initial		Screens Cleaned:	☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	nw N/A	nw 4	4	Init nw
1	22.8	7.77	6.4	308	140	100	0.13 J	10
2	22.7	7.83	6.4	307	end: 22.2	end: 21.7		9
3					start: ~~11.8~~ 18.7 nw 10/7/14	start: 16.7		10
4					Titrant used (mL): 36	Titrant used (mL): 5.8 ~~10.7~~ 10/7/14		10
					Sample volume (mL): 25	Sample volume (mL): 50		—

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10212	Test Photoperiod:	16:8
Sample ID:	SS 1026-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	☒ 0830 MW renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
☒ ~~DO~~ ~~pH~~ chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	MW N/A	MW 4	4	Init: MW
1	22.8	7.60	5.5	303	144	98	0.19 J	10
2	22.7	7.71	5.7	302	end: 25.8	end: 26.6	~~MW= 0.20~~	9
3	/	/	/	/	start: 22.2	start: 21.7	/	9
4	/	/	/	/	Titrant used (mL): 3.6	Titrant used (mL): 4.9	/	10
	/	/	/	/	Sample volume (mL): ~~25~~	Sample volume (mL): 50	/	—

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10213	Test Photoperiod:	16:8
Sample ID:	SS 1028-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali, Blackworm CO, 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	~~830~~ MLV renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
☑ DO 755 chemistries time/Initial		Screens Cleaned:	☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	40	175	175	175	MLV N/A	MLV 4	4	Init: MLV
1	22.7	7.54	4.7	300	128	106	0.20	10
2	22.7	7.70	5.1	316	end: 29.0	end: 31.9		9
3					start: 258	start: 26.6		8
4					Titrant used (mL): 3.2	Titrant used (mL): 5.3		9
					Sample volume (mL): 25	Sample volume (mL): 50		—

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

QC'd by: MLW

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10214	Test Photoperiod:	16:8
Sample ID:	SS 1025-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
755 chemistries time/Initial

Number Daily Renewals: 1
0830 MLW renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	MLW N/A	MLW 4	4	Init MLW
1	22.8	7.5.5	5.4	301	132	98	0.13 J	9
2	22.9	7.61	5.7	301	end: 32.3	end: 36.8		9
3					start: 29.0	start: 31.9		10
4					Titrant used (mL): 3.3	Titrant used (mL): 4.9		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLW

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10215	Test Photoperiod:	16:8
Sample ID:	SS 1010-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali, Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	X 0830 MLW renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
☒ 65 755 chemistrics time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	MLW N/A	MLW 4	4	Init: MLW
1	22.8	7.66	5.9	301	132	100	0.11 J	10
2	22.9	7.70	6.1	303	end: 35.6	end: 41.8		P
3					start: 32.3	start: 36.8		10
4					Titrant used (mL): 3.3	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10216	Test Photoperiod:	16:8
Sample ID:	SS 1029-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
~~0805~~ 755 chemistries time/Initial

Number Daily Renewals: 1
~~0830~~ mw renewal time/Initials □ — renewal
□ renewal time/Initials □ — renewal
Food: None
Screens Cleaned: □ yes ☒ no □ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	mw N/A	mw 4	4	Init: mw
1	22.8	8.04	5.7	338	~~157~~	~~122~~	0.11 J	10
2	22.8	8.04	5.6	338	end: 39.4	end: 47.9		10
3					start: 35.6	start: 41.8		10
4					Titrant used (mL): 3.8	Titrant used (mL): 6.1		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10217	Test Photoperiod:	16:8
Sample ID:	SS 1001-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DO 755 chemistries time/Initial

Number Daily Renewals: 1
~~830~~ renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☒ yes ☐ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	N/A	4	4	Init:
1	22.7	7.57	5.4	300	~~132~~ 140	~~100~~	~~0.11 J~~	8
2	22.7	7.67	5.8	302	end: 42.9	end: 6.5		10
3					start: 39.4	start: 1.5		10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(S_1 - S_2)}{(S_1 + S_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

Hard dup: 132
end 37.7
Start 34.4
3.3

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10218	Test Photoperiod:	16:8
Sample ID:	SS 1042-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	~~0830~~ renewal time/Initials	☐ renewal
Overlying Water:	Dechlor	☐ renewal time/Initials	☐ renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
~~0955~~ chemistries time/Initial		Screens Cleaned:	☐ yes ☑ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	~~new~~ N/A	~~new~~ 4	4	Init: ~~new~~
1	22.7	7.99	5.0	329	152	11.6	~~0.26~~	10
2	22.3	7.91	4.2	333	end: 46.8	end: 12.3		10
3					start: 42.9	start: 6.5		10
4					Titrant used (mL): 3.8	Titrant used (mL): 5.8		9
					Sample volume (mL): ~~25~~	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10219	Test Photoperiod:	16:8
Sample ID:	SS 1009-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
DS 755 chemistries time/Initial

Number Daily Renewals: 1
X830 renewal time/Initials ☐ renewal
☐ renewal time/Initials ☐ renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	N/A	4	4	Init: MLV
1	22.7	7.77	6.1	301	136	~~102~~ 102	0.13 J	8
2	22.7	7.73	6.4	302	end: 4.8	end: 17.4		9
3					start: 1.4	start: 12.3		9
4					Titrant used (mL): 3.4	Titrant used (mL): 5.1		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

dup alk
end 21.8
start 16.7
5.1

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

QC'd by: MLV
10/7/15

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10220	Test Photoperiod:	16:8
Sample ID:	SS 1017-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
☒ DS 755 chemistries time/Initial

Number Daily Renewals: 1
☒ 830 renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	N/A	4	4	Init:
1	22.7	7.69	6.4	290	128	100	0.15J	10
2	22.6	7.68	6.2	303	end: 8.0	end: 22.4	~~0.14J~~	10
3					start: 4.8	start: 17.4		9
4					Titrant used (mL): 3.2	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10221	Test Photoperiod:	16:8
Sample ID:	SS 1011-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
D5 755 chemistries time/Initial

Number Daily Renewals: 1
X 830 renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	179	175	N/A	4	4	Init:
1	22.5	7.80	6.8	306	136	104	0.17J	8
2	22.5	7.76	6.6	310	end: 11.4	end: 27.6		10
3					start: 8.0	start: 22.4		10
4					Titrant used (mL): 3.4	Titrant used (mL): 25.2		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10222	Test Photoperiod:	16:8
Sample ID:	SS 1031-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	1830 MW renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
MD 3755 chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	Mut N/A	Mut 4	4	Init: MW
1	22.7	7.60	5.7	301	132	100	0.78	10
2	22.8	7.61	5.9	300	end: 14.7	end: 32.6		10
3					start: 11.4	start: 27.6		9
4					Titrant used (mL): 3.3	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

GLEC

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10223	Test Photoperiod:	16:8
Sample ID:	SS 1033-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	X 830 mw renewal time/Initials	☐ — renewal
Overlying Water:	Dechlor	☐ — renewal time/Initials	☐ — renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
✓ DS 725 chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	mw N/A	mw 4	4	Init: MLW
1	22.6	7.78	5.7	305	128	102	0.34	10
2	22.8	7.68	5.0	306	end: 17.9	end: 37.7	—	9
3					start: 14.7	start: 32.6		10
4					Titrant used (mL): 3.2	Titrant used (mL): 5.1		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10224	Test Photoperiod:	16:8
Sample ID:	SS 1034-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
MDS 755 chemistries time/Initial

Number Daily Renewals: 1
~~830~~ renewal time/Initials ☐ renewal
☐ renewal time/Initials ☐ renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	~~N/A~~ N/A	~~4~~ 4	4	Init: MLV
1	22.7	7.54	5.8	292.1	128	98	0.60	10
2	22.8	7.53	5.6	293.9	end: 21.1	end: 42.6		7
3					start: 17.9	start: 37.7		10
4					Titrant used (mL): 3.2	Titrant used (mL): 4.9		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10225	Test Photoperiod:	16:8
Sample ID:	SS 1002-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
AOJ 7/5/5 chemistries time/Initial

Number Daily Renewals: 1
~~0830~~ Nur renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	Nur N/A	Nur 4	4	Init: Nur
1	22.7	7.74	6.3	300	136/24	98	0.18 J	10
2	22.7	7.72	6.3	303	end: 24.2	end: 47.5		10
3					start: 24.1	start: 42.6		10
4					Titrant used (mL): 3.1	Titrant used (mL): 4.9		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Start deep 41.1
end ~~41.8~~ Nur 10/7/14
Start 37.7
3.4

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV
10/7 KS

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10226	Test Photoperiod:	16:8
Sample ID:	SS 1005-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	1
Date:	10/7/2014	☒ 830 renewal time/Initials	☐ renewal
Overlying Water:	Dechlor	☐ renewal time/Initials	☐ renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
RDS 75.5 chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	N/A	4	4	Init:
1	22.7	7.75	6.2	309	148	100	0.12 J	10
2	22.7	7.84	6.4	315	end: 27.9	end: 1.2		9
3					start: 24.2	start: 1.2		9
4					Titrant used (mL): 3.7	Titrant used (mL): 5.0		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

Page 4 of 4
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10254	Test Photoperiod:	16:8
Sample ID:	SS 1041-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day:	Day 4	Number Daily Renewals:	
Date:	10/7/2014	~~8~~ 830 MW renewal time/Initials	☐ ✓ renewal
Overlying Water:	Dechlor	☐ renewal time/Initials	☐ renewal
Overlying Water Batch ID (GLC Number):	NA	Food:	None
ADJ 755 chemistries time/Initial		Screens Cleaned:	☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	MW N/A	MW 4	4	Init: MW
1	22.7	7.76	6.1	306	140	108	0.16 J	10
2	22.7	7.85	6.5	315	end: 31.4	end: 11.6		10
3					start: 27.9	start: 6.2		10
4					Titrant used (mL): 3.5	Titrant used (mL): 5.4		10
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

2290-03
Stantec- St. Louis River
Lumbriculus variegatus 4-Day Screening Survival Test

QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec- St. Louis River
GLC#	10256	Test Photoperiod:	16:8
Sample ID:	SS 1012-AT (15cm)	Test System:	Sediment-100 mL and Overlying Water-175mL Manual
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/2/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/02/2014 /Adults
Test Initiation Date:	10/3/2014	Test Termination Date:	10/7/2014

Test Day: Day 4
Date: 10/7/2014
Overlying Water: Dechlor
Overlying Water Batch ID (GLC Number): NA
MDS 755 chemistries time/Initial

Number Daily Renewals: 1
X0830 MW renewal time/Initials ☐ — renewal
☐ — renewal time/Initials ☐ — renewal
Food: None
Screens Cleaned: ☐ yes ☒ no ☐ n/a

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations
Record Meter ID	175	175	175	175	MW N/A	MW 4	4	Init: MW
1	22.8	7.48	6.3	277.7	120	102	0.55	10
2	22.7	7.51	6.4	278.0	end: 34.4	end: 116.7		8
3					start: 31.4	start: 116		10
4					Titrant used (mL): 30	Titrant used (mL): 5.1		9
					Sample volume (mL): 25	Sample volume (mL): 50		

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 8 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Test: EPA 100.3-Lumbriculus 4-day screen
Species: LV-lumbriculus variegatus
Sample ID: STANTEC ST
Start Date: 10/3/2014 End Date: 10/7/2014

Test ID: 2290lumb
Protocol: EPA 600/R-99/064
Sample Type:
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Numbe	Numbe	percent survival	Notes
	1	1	lab con	10	9		
	2	2	lab con	10	9		
	3	3	lab con	10	10		
	4	4	lab con	10	10		
	5	1	10207	10	10		
	6	2	10207	10	10		
	7	3	10207	10	10		
	8	4	10207	10	10		
	9	1	10208	10	10		
	10	2	10208	10	10		
	11	3	10208	10	10		
	12	4	10208	10	9		
	13	1	10209	10	9		
	14	2	10209	10	10		
	15	3	10209	10	10		
	16	4	10209	10	10		
	17	1	10210	10	10		
	18	2	10210	10	9		
	19	3	10210	10	10		
	20	4	10210	10	10		
	21	1	10212	10	10		
	22	2	10212	10	9		
	23	3	10212	10	9		
	24	4	10212	10	10		
	25	1	10213	10	10		
	26	2	10213	10	9		
	27	3	10213	10	8		
	28	4	10213	10	9		
	29	1	10214	10	9		
	30	2	10214	10	9		
	31	3	10214	10	10		
	32	4	10214	10	10		
	33	1	10215	10	10		
	34	2	10215	10	8		
	35	3	10215	10	10		
	36	4	10215	10	10		
	37	1	10216	10	10		
	38	2	10216	10	10		
	39	3	10216	10	10		
	40	4	10216	10	10		
	41	1	10217	10	8		
	42	2	10217	10	10		
	43	3	10217	10	10		
	44	4	10217	10	10		
	45	1	10218	10	10		
	46	2	10218	10	10		
	47	3	10218	10	10		
	48	4	10218	10	9		
	49	1	10219	10	8		
	50	2	10219	10	9		
	51	3	10219	10	9		
	52	4	10219	10	10		
	53	1	10220	10	10		

ToxCalc 5.0

Reviewed by: MLV

Test: EPA 100.3-Lumbriculus 4-day screen
Test ID: 2290lumb
Species: LV-lumbriculus variegatus
Protocol: EPA 600/R-99/064
Sample ID: STANTEC ST
Sample Type:
Start Date: 10/3/2014 End Date: 10/7/2014
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Numbe	Numbe	percent survival	Notes
	54	2	10220	10	10		
	55	3	10220	10	9		
	56	4	10220	10	10		

Comments: Stantec St. Louis 2014 4 day lumbriculus survival 10207-10220

ToxCalc 5.0
Reviewed by:

Test: EPA 100.3-Lumbriculus 4-day screen
Species: LV-lumbriculus variegatus
Sample ID: STANTEC ST
Start Date: 10/3/2014 End Date: 10/7/2014

Test ID: 2290lumb2
Protocol: EPA 600/R-99/064
Sample Type:
Lab ID: -GREAT LAKES ENVIRONMENTAL CENTER

Pos	ID	Rep	Group	Numbe	Numbe	percent survival	Notes
	1	1	lab con	10	9		
	2	2	lab con	10	9		
	3	3	lab con	10	10		
	4	4	lab con	10	10		
	5	1	10221	10	8		
	6	2	10221	10	10		
	7	3	10221	10	10		
	8	4	10221	10	10		
	9	1	10222	10	10		
	10	2	10222	10	10		
	11	3	10222	10	9		
	12	4	10222	10	10		
	13	1	10223	10	10		
	14	2	10223	10	9		
	15	3	10223	10	10		
	16	4	10223	10	10		
	17	1	10224	10	10		
	18	2	10224	10	7		
	19	3	10224	10	10		
	20	4	10224	10	10		
	21	1	10225	10	10		
	22	2	10225	10	10		
	23	3	10225	10	10		
	24	4	10225	10	10		
	25	1	10226	10	10		
	26	2	10226	10	9		
	27	3	10226	10	9		
	28	4	10226	10	10		
	29	1	10254	10	10		
	30	2	10254	10	10		
	31	3	10254	10	10		
	32	4	10254	10	10		
	33	1	10256	10	10		
	34	2	10256	10	8		
	35	3	10256	10	10		
	36	4	10256	10	9		

Comments: Stantec St. Louis 2014 4 day lumbriculus survival 10221-10256

 ToxCalc 5.0 Reviewed by: MLV

Lumbriculus 4-day screen-4-day survival

Start Date:	10/3/2014	Test ID:	2290lumb	Sample ID:	STANTEC ST
End Date:	10/7/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	LV-lumbriculus variegatus
Comments:	Stantec St. Louis 2014 4 day lumbriculus survival 10207-10220				

Conc-%	1	2	3	4
lab con	0.9000	0.9000	1.0000	1.0000
10207	1.0000	1.0000	1.0000	1.0000
10208	1.0000	1.0000	1.0000	0.9000
10209	0.9000	1.0000	1.0000	1.0000
10210	1.0000	0.9000	1.0000	1.0000
10212	1.0000	0.9000	0.9000	1.0000
10213	1.0000	0.9000	0.8000	0.9000
10214	0.9000	0.9000	1.0000	1.0000
10215	1.0000	0.8000	1.0000	1.0000
10216	1.0000	1.0000	1.0000	1.0000
10217	0.8000	1.0000	1.0000	1.0000
10218	1.0000	1.0000	1.0000	0.9000
10219	0.8000	0.9000	0.9000	1.0000
10220	1.0000	1.0000	0.9000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
lab con	0.9500	1.0000	1.3305	1.2490	1.4120	7.072	4			
10207	1.0000	1.0526	1.4120	1.4120	1.4120	0.000	4	-1.732	2.353	0.1107
10208	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10209	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10210	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10212	0.9500	1.0000	1.3305	1.2490	1.4120	7.072	4	0.000	1.943	0.1293
10213	0.9000	0.9474	1.2543	1.1071	1.4120	9.935	4	0.976	2.015	0.1573
10214	0.9500	1.0000	1.3305	1.2490	1.4120	7.072	4	0.000	1.943	0.1293
10215	0.9500	1.0000	1.3358	1.1071	1.4120	11.411	4	-0.059	2.132	0.1909
10216	1.0000	1.0526	1.4120	1.4120	1.4120	0.000	4	-1.732	2.353	0.1107
10217	0.9500	1.0000	1.3358	1.1071	1.4120	11.411	4	-0.059	2.132	0.1909
10218	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10219	0.9000	0.9474	1.2543	1.1071	1.4120	9.935	4	0.976	2.015	0.1573
10220	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	1.57709	0.895	-0.8118	0.27565
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.07124	0.07551	0.00912	0.00981	0.53157	13, 42
Treatments vs lab con						

ToxCalc v5.0.32

Reviewed by: MLV

Lumbriculus 4-day screen-4-day survival

Start Date:	10/3/2014	Test ID:	2290lumb2	Sample ID:	STANTEC ST
End Date:	10/7/2014	Lab ID:	-GREAT LAKES ENVIRONM	Sample Type:	
Sample Date:		Protocol:	EPA 600/R-99/064	Test Species:	LV-lumbriculus variegatus
Comments:	Stantec St. Louis 2014 4 day lumbriculus survival 10221-10256				

Conc-%	1	2	3	4
lab con	0.9000	0.9000	1.0000	1.0000
10221	0.8000	1.0000	1.0000	1.0000
10222	1.0000	1.0000	0.9000	1.0000
10223	1.0000	0.9000	1.0000	1.0000
10224	1.0000	0.7000	1.0000	1.0000
10225	1.0000	1.0000	1.0000	1.0000
10226	1.0000	0.9000	0.9000	1.0000
10254	1.0000	1.0000	1.0000	1.0000
10256	1.0000	0.8000	1.0000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
lab con	0.9500	1.0000	1.3305	1.2490	1.4120	7.072	4			
10221	0.9500	1.0000	1.3358	1.1071	1.4120	11.411	4	-0.059	2.132	0.1909
10222	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10223	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	-0.655	2.015	0.1254
10224	0.9250	0.9737	1.3068	0.9912	1.4120	16.103	4	0.206	2.132	0.2457
10225	1.0000	1.0526	1.4120	1.4120	1.4120	0.000	4	-1.732	2.353	0.1107
10226	0.9500	1.0000	1.3305	1.2490	1.4120	7.072	4	0.000	1.943	0.1293
10254	1.0000	1.0526	1.4120	1.4120	1.4120	0.000	4	-1.732	2.353	0.1107
10256	0.9250	0.9737	1.2951	1.1071	1.4120	11.347	4	0.407	2.015	0.1758

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.87536	0.935	-1.3138	1.70826
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.10673	0.11314	0.00721	0.01334	0.81582	8, 27
Treatments vs lab con						

ToxCalc v5.0.32

Reviewed by: MLV

Appendix F1
Lumbriculus variegatus
October 08-November 05, 2014

28-Day Depurated Wet Weight

- Weights

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

QC'd by: DS

Project Number: **2090-03** Project Nam **Stantec St. Louis River**

GLC#: **CS# 124**
Sample ID: **Laboratory Control**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/7/2014**
Test Initiation Date: **10/8/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Termination Date: **11/5/2014**

Test Day: **28**
Date: **11/5/2014**
DS 543 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet weight (grams)
Record Meter ID	175	175	175	175	N/A	N/A	175	4	11/5/14	11/6/14	
1	/	/	/	/	5.2	148	104	0.29 DS	730	945	27.70g Mat
2	/	/	/	/	5.0	end: 19.0	end: 9.5	/	745	945	24.30g Mat
3	23.0	7.88	7.2	315	5.8	start: 15.3	start: 4.3	/	821	950	23.43g Mat
4	/	/	/	/	5.6	Titrant used (mL): 3.7	Titrant used (mL): 5.2	/	854	950	13.54g Mat
5	23.1	7.76	6.3	317	5.2	Sample volume (mL): 25	Sample volume (mL): 50	/	846	950	24.54g Mat
											113.51g
											MBM QC=113.51g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: DS

Project Number: **2090-03** Project Nam **Stantec St. Louis River**

GLC#: **10207**
Sample ID: **SS 1022-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/7/2014**
Test Initiation Date: **10/8/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Termination Date: **11/5/2014**

Test Day: **28**
Date: **11/5/2014**
~~DS~~ 545 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wght (grams)
Record Meter ID	175	175	175	175	N/A	N/A	160	4	11/5/14	11/6/14	
1	/	/	/	/	5.4	144	DS 2/5/15 ~~200~~ 100	0.22	900	1000	19.00 g Nwt
2	/	/	/	/	5.0	end: 22.6	end: 14.5	DUP 0.22	1050	1000	18.52 g Nwt
3	23.0	8.04	7.9	310	5.0	start: 19.0	start: 9.5	/	1115	1000	17.82 g Nwt
4	/	/	/	/	5.8	Titrant used (mL): 3.6	Titrant used (mL): 5.0	/	1305	1230	16.52 g Nwt
5	23.2	8.05	7.9	309	5.6	Sample volume (mL): 50	Sample volume (mL): 50	/	1111	1230	17.89 g Nwt

89.75 g
mbm QC=89.75g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: DS

Project Number: **2090-03** Project Nam **Stantec St. Louis River**

GLC#: **10208**
Sample ID: **SS 1024-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/7/2014**
Test Initiation Date: **10/8/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Termination Date: **11/5/2014**

Test Day: **28**
Date: **11/5/2014**
DS 545 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wght (grams)
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/5/14	11/6/14	
1	/	/	/	/	4.6	126	100	0.12 J	1045	1215	21.56 g Nwr
2	/	/	/	/	5.0	end: 258	end: 19.5	/	1405	1425	20.31 g Nwr
3	23.0	8.08	8.2	312	4.8	start: 22.6	start: 14.5	/	1430	1425	16.33 g Nwr
4	/	/	/	/	5.0	Titrant used (mL): 3.2	Titrant used (mL): 5.0	/	1215	1215	20.93 g Nwr
5	23.2	7.91	7.4	308	5.0	Sample volume (mL): 25	Sample volume (mL): 50	/	1345	1425	19.52 Nwr

98.65 g
MBM QC = 98.65 g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: DS

Project Number:	**2090-03**	Project Nam	**Stantec St. Louis River**
GLC#:	**10209**	Test Photoperiod:	**16:8**
Sample ID:	**SS 1032-AT**	Test System:	**Sediment-1 Liter, Overlying Water-2 Liters,**
Test Species:	*Lumbriculus variegatus*	Test Temperature:	**23± 1°C**
Date Addition of Sediment:	**10/7/2014**	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Initiation Date:	**10/8/2014**	Test Termination Date:	**11/5/2014**
Test Day:	**28**	Overlying Water:	**Dechlor**
Date:	**11/5/2014**	Overlying Water Batch ID (GLC Number):	**NA**
~~0805~~ 545	chemistries time/Initial	Food:	**none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Weight (grams)
Record Meter ID	175	175	175	175	N/A	N/A 12/3/14 KS	175	4	11/5/14	11/6/14	
1	/	/	/	/	5.2	~~100~~ 32	100	0.18 J	1500	1504	17.58g
2	/	/	/	/	4.0	end: 29.1	end: 24.6	/	1345	1500	18.71g
3	23.0	8.12	8.2	309	4.8	start: 25.8	start: 19.5	/	1404	1509	18.94g
4	/	/	/	/	4.8	Titrant used (mL): 3.3	Titrant used (mL): 5.0	/	1513	1515	16.18g
5	23.2	8.04	7.9	309	4.4	Sample volume (mL): 2.5	Sample volume (mL): 50	/	1624	1519	16.76g

88.17g
mom QC=88.17g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: DS

Project Number:	2090-03	Project Nan	Stantec St. Louis River
GLC#:	10210		
Sample ID:	SS 1021-AT		
Test Species:	*Lumbriculus variegatus*		
Date Addition of Sediment:	10/7/2014		
Test Initiation Date:	10/8/2014		

Test Photoperiod:	16:8
Test System:	Sediment-1 Liter, Overlying Water-2 Liters,
Test Temperature:	23± 1°C
Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Termination Date:	11/5/2014

Test Day:	28
Date:	11/5/2014
7 DS 545	chemistries time/Initial

Overlying Water:	Dechlor
Overlying Water Batch ID (GLC Number):	NA
Food:	none

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wght (grams)
Record Meter ID	175	175	175	175	N/A	N/A		4	11/6/14	11/6/14	
1	/	/	/	/	5.0	144	102	0.15 DS	1551	1530	20.18g
2	/	/	/	/	4.6	end: 32.8	end: 29.7	/	1430	1523	23.31g
3	23.4	8.03	7.8	312	4.6	start: 29.1	start: 24.6	/	11-6-14 921	11-7-14 842	19.42g
4	/	/	/	/	5.0	Titrant used (mL): ~~52.6~~ 3.1 12/30/14	Titrant used (mL): 5.1	/	~~11-5-14~~ 1600	~~11-6-14~~ 11-6-14 1545	22.64g
5	23.3	7.99	7.6	314	5.0	Sample volume (mL): 25	Sample volume (mL): 50	/	~~11-5-14~~ 1827	~~11-6-14~~ 11-6-14 1821	16.30g

102.35g
MGM QC = 102.35g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: DS

Project Number: **2090-03**	Project Narr **Stantec St. Louis River**
GLC#: **10212**	Test Photoperiod: **16:8**
Sample ID: **SS 1026-AT**	Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Species: *Lumbriculus variegatus*	Test Temperature: **23± 1°C**
Date Addition of Sediment: **10/7/2014**	Test Organism Source/Age: DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Initiation Date: **10/8/2014**	Test Termination Date: **11/5/2014**
Test Day: **28**	Overlying Water: **Dechlor**
Date: **11/5/2014**	Overlying Water Batch ID (GLC Number): **NA**
DS 545 chemistries time/Initial	Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wgt (grams)
Record Meter ID	175	175	175	175	N/A	N/A	175	4	11/5/14	11/6/14	
1	/	/	/	/	5.0	148	102	0.16 DS J	1846	1830	20.93 g Nwr
2	/	/	/	/	4.8	end: 36.5	end: 34.8	/	1838	1835	16.77 g Nwr
3	23.0	8.13	8.2	308	4.8	start: 32.8	start: 29.7	/	11-6-14 834	11-7-14 842	19.12 g Nwr
4	/	/	/	/	5.2	Titrant used (mL): 3.7	Titrant used (mL): 3.1	/	11/6/14 11:07	11/7/14 11:35	17.76 g
5	22.9	8.04	7.9	318	4.2	Sample volume (mL): 25	Sample volume (mL): 5c	/	11/6/14 11:05	11/7/14 11:44	21.22

95.8 g
MGM QC=95.8g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by:_____

Project Number: **2090-03**	Project Nam **Stantec St. Louis River**
GLC#: **10213**	
Sample ID: **SS 1028-AT**	
Test Species: *Lumbriculus variegatus*	
Date Addition of Sediment: **10/7/2014**	
Test Initiation Date: **10/8/2014**	

Test Photoperiod: **16:8**	
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**	
Test Temperature: **23± 1°C**	
Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/07/2014 /Adults
Test Termination Date: **11/5/2014**	

Test Day: **28**	
Date: **11/5/2014**	
~~X~~ DJ 545 chemistries time/Initial	

Overlying Water: **Dechlor**	
Overlying Water Batch ID (GLC Number): **NA**	
Food: **none**	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wgt grams
Record Meter ID	175	175	175	175	N/A	N/A		4	11/6/14	11/7/14	
1	/	/	/	/	6.0	148	104	0.16 DJ	11/6/14 11:00	11/7/14 11:49	17.90 g
2	/	/	/	/	6.0	end: 40.2	end: 40.0	/	11/6/14 14:46	11/7/14 13:51	17.83 g
3	23.0	8.02	7.8	309	6.2	start: 36.5	start: 34.8	/	11/6/14 13:22	11/7/14 11:53	17.91 g
4	/	/	/	/	5.8	Titrant used (mL): 3.7	Titrant used (mL): 5.2	/	11/6/14 13:35	11/7/14 11:57	17.71 g
5	23.1	7.95	7.2	311	6.0	Sample volume (mL): 25	Sample volume (mL): 50	/	11/6/14 11:50	11/7/14 13:56	18.01 g
											89.36 g

mum QC = 89.36 g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

QC'd by: DS

Stantec St. Louis River
2090-03
Lumbriculus variegatus 28-Day Survival Test

Project Number: **2090-03** Project Nam **Stantec St. Louis River**

GLC#: **10214**

Sample ID: **SS 1025-AT**

Test Species: *Lumbriculus variegatus*

Date Addition of Sediment: **10/7/2014**

Test Initiation Date: **10/8/2014**

Test Photoperiod: **16:8**

Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**

Test Temperature: **23± 1°C**

Test Organism Source/Age: DBA Cali. Blackworm CO. 10/07/2014 /Adults

Test Termination Date: **11/5/2014**

Test Day: **28**

Date: **11/5/2014**

DS 545 chemistries time/Initial

Overlying Water: **Dechlor**

Overlying Water Batch ID (GLC Number): **NA**

Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	Wet Wgt grams
Record Meter ID	175	175	175	175	N/A	N/A		4	11/6/14	11/7/14	
1					5.8	152	100	0.23 DS	11/6/14 13:15	11/7/14 12:07	16.88g
2					5.6	end: 44.0	end: 45.0		11/6/14 14:49	11/7/14 14:01	17.30g
3	22.9	8.08	8.0	309	5.6	start: 40.2	start: 40.0		11/6/14 15:57	11/7/14 14:06	19.37g
4					5.2	Titrant used (mL): 3.6	Titrant used (mL): 5.0		11/6/14 16:18	11/7/14 14:18	19.31g
5	22.8	7.96	7.3	311	5.0	Sample volume (mL): 25	Sample volume (mL): 50		11/6/14 16:05	11/7/14 14:09	22.95g

95.81g
mean QC = 95.81g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Appendix F2
Lumbriculus variegatus
October 22-November 19, 2014

28-Day Depurated Wet Weight

- Weights

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

QC'd by: MLV

Project Number: **2290-03** Project Name: **Stantec St. Louis River**

GLC#: **ıboratory Control**
Sample ID: **CS#124**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/21/2014**
Test Initiation Date: **10/22/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Termination Date: **11/19/2014**

Test Day: **28**
Date: **11/19/2014**
4 DS 528 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14 wg wg g grams
1	/	/	/	/	3.2	140	100	~~0.81~~	745	820 21.84g Mw
2	/	/	/	/	4.4	end: 8.9	end: 5.1	0.183 2/11/15 mbm	800	825 23.73g Mw
3	22.9	7.83	7.6	321	5.0	start: 5.4	start: 0.1	/	752	827 22.94g Mw
4	22.9	7.43	7.7	320	4.4	Titrant used (mL): 3.5	Titrant used (mL): 5.0		901	830 20.87g Mw
5	/	/	/	/	4.2	Sample volume (mL): 25	Sample volume (mL): 50	/	850	833 17.89g Mw

107.27g
MLM QC=107.27g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number: **2290-03**	Project Name: **Stantec St. Louis River**	Test Photoperiod: **16:8**	
GLC#:	**10215**	Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**	
Sample ID:	**SS1010-AT**	Test Temperature: **23± 1°C**	
Test Species:	*Lumbriculus variegatus*	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/21/2014 Adults
Date Addition of Sediment:	**10/21/2014**	Test Termination Date:	**11/19/2014**
Test Initiation Date:	**10/22/2014**		
Test Day:	**28**	Overlying Water: **Dechlor**	
Date:	**11/19/2014**	Overlying Water Batch ID (GLC Number): **NA**	
805 528	chemistries time/Initial	Food: **none**	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14	Wet Wgt (g)
1	/	/	/	/	3.4	136	98	0.14 J	1008	1030	21.75g MW
2	/	/	/	/	3.3	end: 12.3	end: 10.0	/	1030	1030	21.25g MW
3	23.5	7.94	7.5	310	4.0	start: 8.9	start: 5.1	/	1116	1035	21.50g MW
4	23.5	7.95	7.3	312	3.6	Titrant used (mL): 3.4	Titrant used (mL): 4.9	/	945	1025	21.50g MW
5	/	/	/	/	4.4	Sample volume (mL): 25	Sample volume (mL): 50	/	1042	1035	18.49g MW

104.51g
MLMB QC=104.51g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Page 17 of 17
QC'd by: MLV

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number: **2290-03** Project Name: **Stantec St. Louis River**

GLC#: **10216**
Sample ID: **SS 1029-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/21/2014**
Test Initiation Date: **10/22/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Termination Date: **11/19/2014**

Test Day: **28**
Date: **11/19/2014**
RPS 523 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14	Wet weight (grms)
1	/	/	/	/	4.0	132	104	0.13 J	1035	1010	17.80g MW
2	/	/	/	/	4.0	end: 15.6	end: 15.2	/	1100	1230	21.28g MW
3	22.9	8.03	6.9	317	4.0	start: 12.3	start: 10.0	/	1115	1230	19.50g MW
4	22.9	7.99	7.4	317	4.0	Titrant used (mL): 3.3	Titrant used (mL): 5.2	/	1330	1230	18.24g MW
5	/	/	/	/	4.2	Sample volume (mL): 25	Sample volume (mL): 50	/	1308	1230	20.04g MW

96.86g
m bmby QC = 96.86g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number:	2290-03	Project Name:	Stantec St. Louis River
GLC#:	10217	Test Photoperiod:	16:8
Sample ID:	SS 1001-AT	Test System:	Sediment-1 Liter, Overlying Water-2 Liters,
Test Species:	*Lumbriculus variegatus*	Test Temperature:	23± 1°C
Date Addition of Sediment:	10/21/2014	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Initiation Date:	10/22/2014	Test Termination Date:	11/19/2014
Test Day:	28	Overlying Water:	Dechlor
Date:	11/19/2014	Overlying Water Batch ID (GLC Number):	NA
RDS 175	chemistries time/Initial	Food:	none

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14 Wet weight (g)	
1	/	/	/	/	4.2	136	98	0.13 J	1215	1344	22.05g MW
2	/	/	/	/	4.4	end: 19.0	end: 20.1	/	1337	1344	21.65g MW
3	22.8	8.04	7.7	309	4.8	start: 15.6	start: 15.2	/	1406	1344	21.52g MW
4	22.9	8.06	7.9	310	4.2	Titrant used (mL): 3.4	Titrant used (mL): 4.9	/	1345	1344	21.93g MW
5	/	/	/	/	4.2	Sample volume (mL): 25	Sample volume (mL): 50	✓	MW 11/20/14 ~~1035~~ 1550	1610	21.97g ~~17.80~~ MW

MW 11/20/14
total: 109.12g
MW QC=109.12g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Hardness
DUP = 136
e: 22.4
s: 19.0
used: 3.4
vol: 25

Alkalinity
DUP = 98
e: 25.0
s: 20.1
used: 4.9
vol: 50

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number: **2290-03** Project Name: **Stantec St. Louis River**

GLC#: **10218**
Sample ID: **SS 1042-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/21/2014**
Test Initiation Date: **10/22/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Termination Date: **11/19/2014**

Test Day: **28**
Date: **11/19/2014**
RDS 528 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out	Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14	Wet wgt grams
1	/	/	/	/	6.0	136	100	0.14 J	1445	1615	17.62 g Neat
2	/	/	/	/	5.6	end: 25.8	end: 30.0	/	1653	1615	19.57 g Neat
3	22.6	8.03	7.7	313	5.8	start: 22.4	start: 25.0	/	1730	1630	17.54 g Neat
4	22.7	8.05	7.7	313	6.4	Titrant used (mL): 3.4	Titrant used (mL): 5.0	/	1645	1615	18.70 g Neat
5	/	/	/	/	5.0	Sample volume (mL): 25	Sample volume (mL): 50	/	1600	1615	22.11 g Neat

95.49g
Neat QC=95.49g

Relative % Difference: RPD ≤15%

$$RPD = \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Page 17 of 17
QC'd by: MLV

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number: **2290-03** Project Name: **Stantec St. Louis River**

GLC#: **10219**
Sample ID: **SS 1009-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/21/2014**
Test Initiation Date: **10/22/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Termination Date: **11/19/2014**

Test Day: **28**
Date: **11/19/2014**
~~9~~ 0 5 528 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out	Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/19/14	11/20/14	Wet Weight (grams)
1					6.0	136	102	0.13 J	18.20	1715	19.14g nwr
2					5.8	end: 29.2	end: 35.1	DUP=0.16 J	1755	1715	17.56g nwr
3	22.6	8.10	7.8	311	5.0	start: 25.8	start: 30.0		1820	1720	14.25g nwr
4	22.6	8.00	7.6	311	5.0	Titrant used (mL): 3.4	Titrant used (mL): 5.1		1645	1715	20.10g nwr
5					4.2	Sample volume (mL): 25	Sample volume (mL): 50		11-20-14 1048	11-21-14 1030	18.75g nwr

89.80g
nwr QC=89.80g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number: **2290-03** Project Name: **Stantec St. Louis River**

GLC#: **10220**
Sample ID: **SS 1017-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **10/21/2014**
Test Initiation Date: **10/22/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 10/21/2014 Adults
Test Termination Date: **11/19/2014**

Test Day: **28**
Date: **11/19/2014**
~~DS~~ 578 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out	Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/20/14	11/21/14	Wet Weight grams
1	/	/	/	/	5.2	140	96	0.14 J	922	1015	20.97 g
2	/	/	/	/	5.2	end: 32.7	end: 39.9	/	9:27	1015	21.90 g
3	22.7	8.03	7.7	310	5.2	start: 29.2	start: 35.1	/	1020	1020	19.75 g
4	23.0	7.99	7.6	310	5.0	Titrant used (mL): 3.5	Titrant used (mL): 4.8	/	1009	1020	18.86 g
5	/	/	/	/	4.8	Sample volume (mL): 25	Sample volume (mL): 50	/	950	1010	20.90 g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

101.88 g
MLV QC=101.88g

Stantec St. Louis River
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 12 of 17
QC'd by: MLV

Project Number: **2290-03**	Project Name: **Stantec St. Louis River**	Test Photoperiod: **16:8**	
GLC#:	**10221**	Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**	
Sample ID:	**SS 1011-AT**	Test Temperature: **23± 1°C**	
Test Species:	*Lumbriculus variegatus*	Test Organism Source/Age:	DBA Cali. Blackworm CO. 10/21/2014 Adults
Date Addition of Sediment:	**10/21/2014**	Test Termination Date:	**11/19/2014**
Test Initiation Date:	**10/22/2014**		
Test Day:	**28**	Overlying Water: **Dechlor**	
Date:	**11/19/2014**	Overlying Water Batch ID (GLC Number): **NA**	
ID DS 528	chemistries time/Initial	Food: **none**	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	11/20/14	11/21/14	wet weight grams
1	/	/	/	/	4.8	140	100	11/19/15 MLV 0.120	1315	1338	22.09 g Nwr
2	/	/	/	/	5.2	end: 36.2	end: 44.9	/	1312	1338	20.67 g Nwr
3	22.6	8.01	7.8	314	4.8	start: 32.7	start: 39.9	/	1300	1340	20.66 g Nwr
4	22.6	7.98	7.7	315	4.8	Titrant used (mL): 3.5	Titrant used (mL): 5.0	/	1340	1340	20.35 g Nwr
5	/	/	/	/	5.0	Sample volume (mL): 25	Sample volume (mL): 50	/	1342	1340	20.74 g Nwr

104.51g
mom QC = 104.51g

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Appendix F3
Lumbriculus variegatus
November 12-December 10, 2014

28-Day Depurated Wet Weight

- Weights

QC'd by: MLV

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number:	2290-03	Project Name:	Stantec St. Louis
GLC#:	ıboratory Control		
Sample ID:	CS # 125		
Test Species:	*Lumbriculus variegatus*		
Date Addition of Sediment:	11/11/2014		
Test Initiation Date:	11/12/2014		

Test Photoperiod:	16:8
Test System:	Sediment-1 Liter, Overlying Water-2 Liters,
Test Temperature:	23± 1°C
Test Organism Source/Age:	DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date:	12/10/2014

Test Day:	28
Date:	12/10/2014
DDS 555	chemistries time/Initial

Overlying Water:	Dechlor
Overlying Water Batch ID (GLC Number):	NA
Food:	none

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14	KMW
1	23.0	7.91	7.1	321	3.2	144	108	0.19 J	MW 845	945	22.30g
2	23.0	7.71	5.7	319	4.2	end: 3.6	end: 5.4	/	845	945	20.73g
3	/	/	/	/	4.0	start: 0.0	start: 0.0	/	1002	950	18.88g
4	/	/	/	/	4.0	Titrant used (mL): 3.6	Titrant used (mL): 5.4	/	1030	1025	20.16g
5	/	/	/	/	3.6	Sample volume (mL): 2.5	Sample volume (mL): 50	/	1144	1200	18.62g

100.69g
QC by: MGM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number: **2290-03** Project Name: **Stantec St. Louis**
GLC#: **10222**
Sample ID: **SS 1031-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **11/11/2014**
Test Initiation Date: **11/12/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date: **12/10/2014**

Test Day: **28**
Date: **12/10/2014**
~~9:00~~ 555 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14 Mlir
1	23.1	7.76	6.3	313	4.6	140	102	0.15 J	1114	1200 22.48 g
2	23.1	7.83	6.8	311	3.6	end: 7.1	end: 10.5	/	1030	1030 23.04 g
3	/	/	/	/	4.0	start: 3.6	start: 5.4	/	1045	1030 21.38 g
4	/	/	/	/	4.0	Titrant used (mL): 3.5	Titrant used (mL): 5.1	/	1145	1200 21.28 g
5	/	/	/	/	4.4	Sample volume (mL): 25	Sample volume (mL): 50	/	1226	1205 22.78 g

110.96 g
QC By: MLM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

QC'd by: MLV

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number: **2290-03**	Project Name: **Stantec St. Louis**	Test Photoperiod: **16:8**	
GLC#: **10223**		Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**	
Sample ID: **SS 1033-AT**		Test Temperature: **23± 1°C**	
Test Species: *Lumbriculus variegatus*		Test Organism Source/Age:	DBA Cali. Blackworm CO. 11/12/2014 /Adults
Date Addition of Sediment: **11/11/2014**		Test Termination Date: **12/10/2014**	
Test Initiation Date: **11/12/2014**			
Test Day: **28**		Overlying Water: **Dechlor**	
Date: **12/10/2014**		Overlying Water Batch ID (GLC Number): **NA**	
~~X~~ DS 555 chemistries time/Initial		Food: **none**	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14	MW
1	23.0	7.97	7.5	313	4.8	~~276~~ 136	100	0.16J	1231	1250	22.76 g
2	22.9	8.07	7.8	314	4.0	end: ~~1.0~~ 20.9 (DS 12/9/14)	end: 15.5		1300	1250	22.50 g
3					4.0	start: ~~7.1~~ 24.3	start: 10.5		1230	1245	18.74 g
4					4.0	Titrant used (mL): ~~6.9~~ 3.4	Titrant used (mL): 5.0		1346	1400	20.55 g
5					3.8	Sample volume (mL): 25	Sample volume (mL): 50		1250	1255	23.64 g

108.19 g

QC by: MGM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

QC'd by: MLV

Project Number: **2290-03** Project Name: **Stantec St. Louis**
GLC#: **10224**
Sample ID: **SS 1034-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **11/11/2014**
Test Initiation Date: **11/12/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date: **12/10/2014**

Test Day: **28**
Date: **12/10/2014**
8 03 555 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period Time In Init:	Time Out	Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14	NW
1	23.1	8.01	7.7	309	4.8	140/136	98/100	0.14 J	1300	1345	22.44g
2	23.1	8.07	7.9	309	4.8	end: 17.5/20.8	end: 20.4/25.4	DUP 0.13 J	1448	1410	23.25g
3					3.8	start: 11.0/17.5	start: 15.5/20.4		1446	1410	21.76g
4					4.8	Titrant used (mL): 3.5/3.4	Titrant used (mL): 4.9/5.0		1348	1400	23.40g
5					4.8	Sample volume (mL): 25	Sample volume (mL): 50		1506	1540	23.08g

114.93g
QC bf MGM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLW

Project Number: **2290-03** Project Name: **Stantec St. Louis**
GLC#: **10225**
Sample ID: **SS 1002-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **11/11/2014**
Test Initiation Date: **11/12/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date: **12/10/2014**

Test Day: **28**
Date: **12/10/2014**
DS 555 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14	[illegible]
1	23.1	7.95	7.4	308	3.8	140	98	0.17 J	1530	1550	22.12g
2	23.0	8.04	7.7	308	4.6	end: 27.8	end: 30.3	/	1506	1550	21.95g
3	/	/	/	/	4.8	start: 24.3	start: 25.4	/	1500	1600	22.10g
4	/	/	/	/	4.0	Titrant used (mL): 3.5	Titrant used (mL): 9.9	/	1637	1600	18.94g
5	/	/	/	/	4.0	Sample volume (mL): 25	Sample volume (mL): 50	/	1716	1605	20.83g

105.94g
QC [illegible]

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Page 17 of 17
QC'd by: MLV

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number: **2290-03** Project Name: **Stantec St. Louis**
GLC#: **10226**
Sample ID: **SS 1005-AT**
Test Species: *Lumbriculus variegatus*
Date Addition of Sediment: **11/11/2014**
Test Initiation Date: **11/12/2014**

Test Photoperiod: **16:8**
Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**
Test Temperature: **23± 1°C**
Test Organism Source/Age: DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date: **12/10/2014**

Test Day: **28**
Date: **12/10/2014**
~~AS~~ S 555 chemistries time/Initial

Overlying Water: **Dechlor**
Overlying Water Batch ID (GLC Number): **NA**
Food: **none**

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/10/14	hwr
1	23.2	8.05	7.7	311	4.0	148	104	0.14J	1630	1610	23.71g
2	23.1	8.13	7.9	310	4.0	end: 31.5	end: 35.5	/	1700	1610	21.79g
3	/	/	/	/	3.8	start: 27.8	start: 30.3	/	1730	1610	22.71g
4	/	/	/	/	4.2	Titrant used (mL): 3.7	Titrant used (mL): 5.2	/	1756	1610	20.45g
5	/	/	/	/	4.0	Sample volume (mL): 25	Sample volume (mL): 50	/	~~1316~~ 12-10-14 KS	~~1610~~ KS	~~23.33g~~ KS
									1930	1630	24.26 KS

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.
Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

112.92g
QC By: MLW

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Page 17 of 17
QC'd by: MLV

Project Number: **2290-03**	Project Name: **Stantec St. Louis**	Test Photoperiod: **16:8**	
GLC#: **10254**		Test System: **Sediment-1 Liter, Overlying Water-2 Liters,**	
Sample ID: **SS 1041-AT**		Test Temperature: **23± 1°C**	
Test Species: *Lumbriculus variegatus*		Test Organism Source/Age:	DBA Cali. Blackworm CO. 11/12/2014 /Adults
Date Addition of Sediment: **11/11/2014**		Test Termination Date: **12/10/2014**	
Test Initiation Date: **11/12/2014**			
Test Day: **28**		Overlying Water: **Dechlor**	
Date: **12/10/2014**		Overlying Water Batch ID (GLC Number): **NA**	
¢DS 555 chemistries time/Initial		Food: **none**	

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out Init:	
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/10/14	12/11/14	
1	23.1	8.11	7.8	314	3.4	136	106	0.14 J	~~1638~~ ~~1616~~	1638 ~~1616~~	21.08 ~~23.33~~
2	23.2	8.00	7.4	312	4.2	end: 34.9	end: 40.8	/	1818	1616	22.33
3	/	/	/	/	4.6	start: 31.5	start: 35.5	/	1838	1638	22.52
4	/	/	/	/	4.6	Titrant used (mL): 3.4	Titrant used (mL): 5.3	/	12/11/14 800	12/12/14 900	24.15g
5	/	/	/	/	4.8	Sample volume (mL): 25	Sample volume (mL): 50	/	12/11/14 800	12/12/14 900	24.18g

112.26g
QC by: MGM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Page 17 of 17

QC'd by: MLN

Stantec St. Louis
2290-03
Lumbriculus variegatus 28-Day Survival Test

Project Number:	2290-03	Project Name:	Stantec St. Louis
GLC#:	10256		
Sample ID:	SS 1012-AT		
Test Species:	*Lumbriculus variegatus*		
Date Addition of Sediment:	11/11/2014		
Test Initiation Date:	11/12/2014		

Test Photoperiod:	16:8
Test System:	Sediment-1 Liter, Overlying Water-2 Liters,
Test Temperature:	23± 1°C
Test Organism Source/Age:	DBA Cali. Blackworm CO. 11/12/2014 /Adults
Test Termination Date:	12/10/2014

Test Day:	28
Date:	12/10/2014
✓ DS 555	chemistries time/Initial

Overlying Water:	Dechlor
Overlying Water Batch ID (GLC Number):	NA
Food:	none

Replicate	Temperature (23± 1°C)*	pH	Dissolved Oxygen (mg/L)*	Specific Conductance (µmhos/cm)	Flow (3-7 mL per minute)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Ammonia (as N)	Observations/ Depuration Period: Time In Init:	Time Out	Init:
Record Meter ID	175	175	175	175	N/A	N/A	168	4	12/11/14	12/12/14	MLN
1	23.3	8.04	7.8	302	4.8	136	100	0.20	1224	1230	21.54g
2	23.2	7.85	7.0	310	4.6	end: 38.3	end: 45.8	/	1030	1115	22.12g
3	/	/	/	/	3.8	start: 34.9	start: 40.8	/	1045	1115	20.39g
4	/	/	/	/	4.0	Titrant used (mL): 3.4	Titrant used (mL): 5.0	/	1140	1230	23.71g
5	/	/	/	/	4.0	Sample volume (mL): 25	Sample volume (mL): 50	/	1230	1230	23.45g

111.24g
QC By: MGM

Relative % Difference: RPD ≤15%

$$RPD = \left| \frac{(s_1 - s_2)}{(s_1 + s_2)/2} \right| \times 100 =$$

* Contact Laboratory Coordinator if Dissolved Oxygen level is < 2.5 mg/L or if Temperature is out of range.
*Alkalinity, hardness and ammonia analyzed from a composite sample of all 5 replicates.

Ammonia Reporting Limits:
RL = Reporting Limit (0.20 mg/L).
MDL = Minimum Detection Limit (0.02 mg/L) - last updated 12/2013.
U = Below MDL. J = ≥ MDL and < RL.

KEY:
AV: Animals Visible
NAV: No Animals Visible
FOV: Foreign Organism Visible
BHV: Bore Holes Visible
WC: Overlying water visibly clear

Appendix F4
Lumbriculus variegatus Tissue Analysis

- Chain of Custody
- Analytical Results

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

RS

40108983

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	M. Garton
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City, MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

***Preservation Codes**
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) Y / N
PRESERVATION (CODE)* Pick Letter

Analyses Requested: PAHs EPA Method 8270D-SIM; PCBs EPA-8082; Metals As, Ba, Cd, Cr, Pb, Hg copper Nickel; Tox per 12/29/14; Moisture; Dioxins EPA 8290

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (Rev 12/23/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	BKGD 100814 Lumb	10/8/14	1600	Tissue	~~Lab control~~ Background Worms	1-4oz aq A	
002	Control 100814 Lumb	11/5-6/14	730-950		~~BKGD Worms~~ Lab Control	1-8oz aq A	
003	10207 Lumb	11/5-6/14	9-1230		SS-1022-AT		
004	10208 Lumb	11/5-6/14	1045-1425		SS 1024-AT		
005	10209 Lumb	11/5-6/14	1500-1519		SS-1032-AT		
006	10210 Lumb	11/5-7/14	921-1821		SS-1021-AT		
007	10212 Lumb	11/5-7/14	834-1835		SS-1026-AT		
008	10213 Lumb	11/6-7/14	1100-1356		SS-1028-AT		
009	10214 Lumb	11/6-7/14	1315-1418		SS-1025-AT		
010	BKGD 102214 Lumb	10/22/14	1530		Background Worms	C 1-4oz aq A	
011	Control 102214 Lumb	11/19-20/14	0745-0833		Control Lab.		
012	10215 Lumb	11/19-20/14	945-1035		SS-1010-AT		
013	10216 Lumb	11/19-20/14	1100-1010	Tissue	SS-1029-AT		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Marlee W Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[signature]	12/30/14 1030

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Marlee Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) — Y/N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested: EPA PAHs 8270D-SIM; EPA 8082 PCBs; As, Ba, Cd, Cr, Pb, Hg Metals copper, Nickel; TOC (new 12/29/14); Moisture; Dioxins EPA 8290

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (new 12/29/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
014	10217 Lumb	11/19-20/14	1315-1610	Tissue	SS-1001-AT	1-8ozag A	
015	10218 Lumb	11/19-20/14	1445-1630		SS-1042-AT		
016	10219 Lumb	11/19-21/14	1048-1720		SS 1009-AT		
017	10220 Lumb	11/20-21/14	922-1030		SS 1017-AT		
018	10221 Lumb	11/20-21/14	1300-1340		SS 1011-AT		
019	BKGD 11/12/14 Lumb	11/12/14	1535		Background wells	C 1-4ozag A	
020	Control 11/12/14 Lumb	12/10-11/14	845-1200		Lab Control		
021	10222 Lumb	12/10-11/14	1030-1205		SS 1031-AT		
022	10223 Lumb	12/10-11/14	1231-1400		SS 1033-AT		
023	10224 Lumb	12/10-11/14	1300-1540		SS 1034-AT		
024	10225 Lumb	12/10-11/14	1500-1605		SS 1002-AT		
025	10226 Lumb	12/10-11/14	1630-1630		SS 1005-AT		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Marlee Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[signature]	12/30/14 1030

PACE Project No. 40108983
Receipt Temp = 0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290.00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Mark Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEC
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, W = Water, B = Biota, DW = Drinking Water, C = Charcoal, GW = Ground Water, O = Oil, SW = Surface Water, S = Soil, WW = Waste Water, Sl = Sludge, WP = Wipe

FILTERED? (YES/NO) — Y / N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested: PAHs EPA 8270D-Sim; PCBs EPA 8082; Metals As, Ba, Cd, Copper Cr, Pb, Hg, Nickel; ~~TPH~~ Nutr 12/28/14; Moisture; Dioxins EPA 8290D

PACE LAB #	LAB ~~CLIENT FIELD~~ ID	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
026	10254 Lumb	12/10-12/14	1518-900	Tissue	SS 1041-AT	1-8oz agA	
027	10256 Lumb	12/11-12/14	1030-1230	Tissue	SS 1012-AT	↓	

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mark Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[illegible]	12/30/14 1030

PACE Project No. 40108983
Receipt Temp = 0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

40108983

Metals to be analyzed - arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc using EPA Method 6010/7474. These are not the RCRA metals. At our request **PACE quoted Metals by ICP-MS - (As, Ba, Cd, Cr, Pb, Hg, Se, Ag) (soil/solid). We will need to add copper and nickel to the list and do not need Se and Ag.**

PCB using EPA Method 8082; **PACE quoted Method 8082 also. OK**

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270**

17 Dioxin isomers – I see that you indicated analyzing using EPA method 1613B. We are using EPA Method 8290 for the soil/sediment analysis.

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270.** 8270 SIM has lower detection limits, and is essentially a second 8270 run. If this is needed, the price does increase slightly. Generally 8270D-SIM is NOT run unless these limits are needed.

For the Dioxin in Tissue, we can analyze by 8290 instead of 1613B, there will not be difference in price.

Please use the listed Methods for analysis

Sample Condition Upon Receipt

Pace Analytical

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40108983

40108983

Client Name: Great Lakes Env.

Courier: ☒ Fed Ex ☐ UPS ☐ Client ☐ Pace Other: _____

Tracking #: 9802 5316 3260

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used JR-47 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0 /Corr: 0 **Biological Tissue is Frozen:** ☒ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Person examining contents:
Date: 12/30/14
Initials: RS

		Comments:
Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time:
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☒ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: Bio		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐ Yes ☐ No ☒ N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐ Yes ☐ No ☒ N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐ Yes ☒ No	Initial when completed / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____ If checked, see attached form for additional comments ☐
Comments/ Resolution: _____

Project Manager Review: Amt for TN **Date:** 12/30/14

F-GB-C-031-Rev.02 (28Oct2013) SCUR Form

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone: 920-469-2436
Fax: 920-469-8827

February 9, 2015

Mr. Dennis McCauley
President/Principal Research Scientist
Great Lakes Environmental Center, Inc.

Dear Mr. McCauley:

The Pace Analytical Services, Inc – Green Bay Laboratory completed the analysis for Pace Project 40108983 Polyaromatic Hydrocarbons (PAH) in the biological tissue matrix by EPA 8270C SIM utilizing the EPA 3540C extraction method. Prior to analysis, the samples and associated quality control standards are additionally processed through the EPA method 3640A Gel Permeation Chromatography (GPC). This is a size exclusion clean-up procedure using organic solvents and hydrophobic gels in the separation of synthetic macromolecules and is a recommended method for the elimination of lipids and similar components in solid sample extracts.

While method EPA 3640A effectively removes a large majority of the lipid interferences, it is still present in the chromatograms after the procedure has been completed. The lipids peak contains the primary ion 276 and secondary ion 138; which is also the ions used in the identification of Ideno(1,2,3-cd) pyrene. The lipids peak elutes just before the expected retention time of Ideno(1,2,3-cd)pyrene, and dependent upon the area of the lipid peak, it may tail. This tailing causes a shift in the expected retention times of all subsequent compounds; however they are still within the appropriate retention time windows. The EPA 8270C SIM procedure identifies compounds based on the primary and secondary ions and retention time in the chromatograms. The laboratory chromatograms for these samples contain the primary and secondary ions within the expected retention time window for Indeno(1,2,3-cd)pyrene. Based on analyst judgment, they are quantitated as positive detections and given the B data qualifier. Due to limitations of the selective ion monitoring mode, the laboratory is unable to determine if the Indeno(1,2,3-cd)pyrene detections are attributed to the lipid interference.

If you have any questions or comments, please do not hesitate to contact me at (920) 469-2436 or via E-mail at Kate.Grams@pacelabs.com.

Respectfully,

Kate E. Grams

Kate E. Grams
Quality Manager
Pace Analytical Services, Inc. – Green Bay Laboratory

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

January 30, 2015

Dennis McCauley
Great Lakes Environmental Center, Inc.
739 Hastings Street
Traverse City, MI 49686

RE: Project: 2290-00 STANTEC
Pace Project No.: 40108983

Dear Dennis McCauley:
Enclosed are the analytical results for sample(s) received by the laboratory on December 30, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
tod.noltemeyer@pacelabs.com
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Green Bay Certification IDs
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40108983001	**BKGD 100814 LUMB**	Tissue	10/08/14 16:00	12/30/14 10:30
40108983002	**CONTROL 100814 LUMB**	Tissue	11/06/14 09:50	12/30/14 10:30
40108983003	**10207 LUMB**	Tissue	11/06/14 12:30	12/30/14 10:30
40108983004	**10208 LUMB**	Tissue	11/06/14 14:25	12/30/14 10:30
40108983005	**10209 LUMB**	Tissue	11/06/14 15:19	12/30/14 10:30
40108983006	**10210 LUMB**	Tissue	11/07/14 18:21	12/30/14 10:30
40108983007	**10212 LUMB**	Tissue	11/07/14 18:35	12/30/14 10:30
40108983008	**10213 LUMB**	Tissue	11/07/14 13:56	12/30/14 10:30
40108983009	**10214 LUMB**	Tissue	11/07/14 14:18	12/30/14 10:30
40108983010	**BKGD 102214 LUMB**	Tissue	10/22/14 15:30	12/30/14 10:30
40108983011	**CONTROL 102214 LUMB**	Tissue	11/20/14 08:33	12/30/14 10:30
40108983012	**10215 LUMB**	Tissue	11/20/14 10:35	12/30/14 10:30
40108983013	**10216 LUMB**	Tissue	11/20/14 16:10	12/30/14 10:30
40108983014	**10217 LUMB**	Tissue	11/20/14 16:10	12/30/14 10:30
40108983015	**10218 LUMB**	Tissue	11/20/14 16:30	12/30/14 10:30
40108983016	**10219 LUMB**	Tissue	11/21/14 17:20	12/30/14 10:30
40108983017	**10220 LUMB**	Tissue	11/21/14 10:20	12/30/14 10:30
40108983018	**10221 LUMB**	Tissue	11/21/14 13:40	12/30/14 10:30
40108983019	**BKGD 111214 LUMB**	Tissue	11/12/14 15:35	12/30/14 10:30
40108983020	**CONTROL 111214 LUMB**	Tissue	12/11/14 12:00	12/30/14 10:30
40108983021	**10222 LUMB**	Tissue	12/11/14 12:05	12/30/14 10:30
40108983022	**10223 LUMB**	Tissue	12/11/14 14:00	12/30/14 10:30
40108983023	**10224 LUMB**	Tissue	12/11/14 15:40	12/30/14 10:30
40108983024	**10225 LUMB**	Tissue	12/11/14 16:05	12/30/14 10:30
40108983025	**10226 LUMB**	Tissue	12/11/14 16:30	12/30/14 10:30
40108983026	**10254 LUMB**	Tissue	12/12/14 09:00	12/30/14 10:30
40108983027	**10256 LUMB**	Tissue	12/12/14 12:30	12/30/14 10:30

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40108983001	**BKGD 100814 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983002	**CONTROL 100814 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983003	**10207 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983004	**10208 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983005	**10209 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983006	**10210 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983007	**10212 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983008	**10213 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983009	**10214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983010	**BKGD 102214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983011	**CONTROL 102214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983012	**10215 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983013	**10216 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983014	**10217 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983015	**10218 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Pace Lipid	ABF	1	PASI-G
40108983016	**10219 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983017	**10220 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983018	**10221 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983019	**BKGD 111214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983020	**CONTROL 111214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983021	**10222 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983022	**10223 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983023	**10224 LUMB**	EPA 8082A	BLM	10	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983024	**10225 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983025	**10226 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983026	**10254 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983027	**10256 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8082A**
Description: 8082A GCS PCB
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 8082A. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3541 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/25575

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: OEXT/25576

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH in Tissue
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3540 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: OEXT/25577

B: Analyte was detected in the associated method blank.
- BLANK for HBN 182974 [OEXT/255 (Lab ID: 1103376)
  - Indeno(1,2,3-cd)pyrene

QC Batch: OEXT/25578

B: Analyte was detected in the associated method blank.
- BLANK for HBN 182975 [OEXT/255 (Lab ID: 1103380)
  - Indeno(1,2,3-cd)pyrene

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/25577

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: OEXT/25578

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH in Tissue
Client: Great Lakes Environmental Center
Date: January 30, 2015

Additional Comments:

Batch Comments:

One compound above RDL in extraction blank; compound flagged in samples. Only projects that have been OK'd by clients are being reported.

- QC Batch: MSSV / 7553

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **ASTM D2974-87**
Description: Percent Moisture Reportable
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for ASTM D2974-87. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **Pace Lipid**
Description: Lipid
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for Pace Lipid. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

A lipid duplicate was not performed for this batch due to insufficient sample volume.
- QC Batch: OEXT / 25590
- QC Batch: OEXT / 25591

This data package has been reviewed for quality and completeness and is approved for release.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 100814 LUMB **Lab ID: 40108983001** Collected: 10/08/14 16:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 14:22	877-09-8	
Decachlorobiphenyl (S)	81	%	55-130		1	01/05/15 13:14	01/21/15 14:22	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.21**	mg/kg	0.099	0.013	1	01/07/15 10:00	01/08/15 21:43	7440-38-2	
Barium	**11.5**	mg/kg	0.099	0.017	1	01/07/15 10:00	01/08/15 21:43	7440-39-3	
Cadmium	**0.037J**	mg/kg	0.099	0.0077	1	01/07/15 10:00	01/08/15 21:43	7440-43-9	
Chromium	**0.061J**	mg/kg	0.099	0.043	1	01/07/15 10:00	01/08/15 21:43	7440-47-3	
Copper	**2.0**	mg/kg	0.099	0.029	1	01/07/15 10:00	01/08/15 21:43	7440-50-8	
Lead	**0.062J**	mg/kg	0.099	0.011	1	01/07/15 10:00	01/08/15 21:43	7439-92-1	
Mercury	**<0.0076**	mg/kg	0.020	0.0076	1	01/07/15 10:00	01/08/15 21:43	7439-97-6	
Nickel	**0.065J**	mg/kg	0.099	0.030	1	01/07/15 10:00	01/08/15 21:43	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:11	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:11	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:11	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:11	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:11	120-12-7	
Benzo(a)anthracene	**1.4J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:11	56-55-3	
Benzo(a)pyrene	**21.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:11	50-32-8	
Benzo(b)fluoranthene	**1.4J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:11	205-99-2	
Benzo(g,h,i)perylene	**27.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:11	191-24-2	
Benzo(k)fluoranthene	**1.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:11	207-08-9	
Chrysene	**2.9J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:11	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:11	53-70-3	
Fluoranthene	**4.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:11	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:11	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.7**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:11	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:11	91-20-3	
Phenanthrene	**5.3**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:11	85-01-8	
Pyrene	**4.5**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:11	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:11	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 16:11	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 100814 LUMB **Lab ID: 40108983001** Collected: 10/08/14 16:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.0**	%	0.10	0.10	1		01/07/15 05:39		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.6**	%			1		01/08/15 10:39		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 100814 LUMB **Lab ID: 40108983002** Collected: 11/06/14 09:50 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	45-130		1	01/05/15 13:14	01/21/15 14:40	877-09-8	
Decachlorobiphenyl (S)	82	%	55-130		1	01/05/15 13:14	01/21/15 14:40	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.5**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/08/15 22:23	7440-38-2	
Barium	**15.2**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/08/15 22:23	7440-39-3	
Cadmium	**0.030J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/08/15 22:23	7440-43-9	
Chromium	**0.11**	mg/kg	0.092	0.040	1	01/07/15 10:00	01/08/15 22:23	7440-47-3	
Copper	**7.6**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/08/15 22:23	7440-50-8	
Lead	**0.13**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/08/15 22:23	7439-92-1	
Mercury	**0.0078J**	mg/kg	0.018	0.0071	1	01/07/15 10:00	01/08/15 22:23	7439-97-6	
Nickel	**0.085J**	mg/kg	0.092	0.028	1	01/07/15 10:00	01/08/15 22:23	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:28	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:28	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:28	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:28	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:28	120-12-7	
Benzo(a)anthracene	**1.1J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:28	56-55-3	
Benzo(a)pyrene	**29.4**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:28	50-32-8	
Benzo(b)fluoranthene	**1.9J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:28	205-99-2	
Benzo(g,h,i)perylene	**26.0**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:28	191-24-2	
Benzo(k)fluoranthene	**2.0J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:28	207-08-9	
Chrysene	**2.3J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:28	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:28	53-70-3	
Fluoranthene	**3.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:28	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.2**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:28	193-39-5	B
Naphthalene	**0.89J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:28	91-20-3	
Phenanthrene	**7.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:28	85-01-8	
Pyrene	**3.1J**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:28	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:10	01/19/15 16:28	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 100814 LUMB **Lab ID: 40108983002** Collected: 11/06/14 09:50 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.4**	%	0.10	0.10	1		01/07/15 05:39		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.9**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10207 LUMB **Lab ID: 40108983003** Collected: 11/06/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	12672-29-6	
PCB-1254 (Aroclor 1254)	**20.2J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11097-69-1	
PCB-1260 (Aroclor 1260)	**26.2**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11096-82-5	
PCB, Total	**46.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	85	%	45-130		1	01/05/15 13:14	01/21/15 14:58	877-09-8	
Decachlorobiphenyl (S)	90	%	55-130		1	01/05/15 13:14	01/21/15 14:58	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.5**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 22:36	7440-38-2	
Barium	**22.6**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 22:36	7440-39-3	
Cadmium	**0.041J**	mg/kg	0.097	0.0076	1	01/07/15 10:00	01/08/15 22:36	7440-43-9	
Chromium	**0.31**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 22:36	7440-47-3	
Copper	**9.4**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 22:36	7440-50-8	
Lead	**0.50**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 22:36	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.019	0.0075	1	01/07/15 10:00	01/08/15 22:36	7439-97-6	
Nickel	**0.25**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 22:36	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:45	90-12-0	
2-Methylnaphthalene	**2.7J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:45	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:45	83-32-9	
Acenaphthylene	**2.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:45	208-96-8	
Anthracene	**6.7**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:45	120-12-7	
Benzo(a)anthracene	**10.9**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:45	56-55-3	
Benzo(a)pyrene	**36.9**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:45	50-32-8	
Benzo(b)fluoranthene	**5.3**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:45	205-99-2	
Benzo(g,h,i)perylene	**18.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:45	191-24-2	
Benzo(k)fluoranthene	**7.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:45	207-08-9	
Chrysene	**7.3**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:45	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:45	53-70-3	
Fluoranthene	**13.6**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:45	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:45	86-73-7	
Indeno(1,2,3-cd)pyrene	**18.1**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:45	193-39-5	B
Naphthalene	**6.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:45	91-20-3	
Phenanthrene	**8.4**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:45	85-01-8	
Pyrene	**12.4**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:45	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:45	321-60-8	
Terphenyl-d14 (S)	96	%	51-130		2	01/06/15 13:10	01/19/15 16:45	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10207 LUMB **Lab ID: 40108983003** Collected: 11/06/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.9**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10208 LUMB **Lab ID: 40108983004** Collected: 11/06/14 14:25 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	12672-29-6	
PCB-1254 (Aroclor 1254)	**14.4J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11097-69-1	
PCB-1260 (Aroclor 1260)	**14.9J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11096-82-5	
PCB, Total	**29.3**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	45-130		1	01/05/15 13:14	01/21/15 15:16	877-09-8	
Decachlorobiphenyl (S)	86	%	55-130		1	01/05/15 13:14	01/21/15 15:16	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.0**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 22:42	7440-38-2	
Barium	**15.8**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 22:42	7440-39-3	
Cadmium	**0.033J**	mg/kg	0.097	0.0075	1	01/07/15 10:00	01/08/15 22:42	7440-43-9	
Chromium	**0.30**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 22:42	7440-47-3	
Copper	**7.1**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 22:42	7440-50-8	
Lead	**0.24**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 22:42	7439-92-1	
Mercury	**0.0086J**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 22:42	7439-97-6	
Nickel	**0.28**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 22:42	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:03	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:03	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:03	83-32-9	
Acenaphthylene	**2.2J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:03	208-96-8	
Anthracene	**7.9**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:03	120-12-7	
Benzo(a)anthracene	**33.2**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:03	56-55-3	
Benzo(a)pyrene	**45.9**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:03	50-32-8	
Benzo(b)fluoranthene	**27.6**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:03	205-99-2	
Benzo(g,h,i)perylene	**16.2**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:03	191-24-2	
Benzo(k)fluoranthene	**39.6**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:03	207-08-9	
Chrysene	**39.9**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:03	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:03	53-70-3	
Fluoranthene	**67.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:03	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:03	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:03	193-39-5	B
Naphthalene	**1.5J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:03	91-20-3	
Phenanthrene	**8.2**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:03	85-01-8	
Pyrene	**62.4**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:03	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	78	%	59-130		2	01/06/15 13:10	01/19/15 17:03	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 17:03	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10208 LUMB **Lab ID: 40108983004** Collected: 11/06/14 14:25 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.7**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10209 LUMB **Lab ID: 40108983005** Collected: 11/06/14 15:19 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	12672-29-6	
PCB-1254 (Aroclor 1254)	**31.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11097-69-1	
PCB-1260 (Aroclor 1260)	**55.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11096-82-5	
PCB, Total	**87.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	80	%	45-130		1	01/05/15 13:14	01/21/15 15:33	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 15:33	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.75**	mg/kg	0.091	0.012	1	01/07/15 10:00	01/08/15 22:49	7440-38-2	
Barium	**21.5**	mg/kg	0.091	0.015	1	01/07/15 10:00	01/08/15 22:49	7440-39-3	
Cadmium	**0.041J**	mg/kg	0.091	0.0071	1	01/07/15 10:00	01/08/15 22:49	7440-43-9	
Chromium	**0.37**	mg/kg	0.091	0.039	1	01/07/15 10:00	01/08/15 22:49	7440-47-3	
Copper	**8.1**	mg/kg	0.091	0.026	1	01/07/15 10:00	01/08/15 22:49	7440-50-8	
Lead	**0.46**	mg/kg	0.091	0.010	1	01/07/15 10:00	01/08/15 22:49	7439-92-1	
Mercury	**0.0075J**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/08/15 22:49	7439-97-6	
Nickel	**0.29**	mg/kg	0.091	0.027	1	01/07/15 10:00	01/08/15 22:49	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:20	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:20	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:20	83-32-9	
Acenaphthylene	**5.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:20	208-96-8	
Anthracene	**14.4**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:20	120-12-7	
Benzo(a)anthracene	**24.9**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:20	56-55-3	
Benzo(a)pyrene	**76.1**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:20	50-32-8	
Benzo(b)fluoranthene	**23.6**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:20	205-99-2	
Benzo(g,h,i)perylene	**19.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:20	191-24-2	
Benzo(k)fluoranthene	**40.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:20	207-08-9	
Chrysene	**36.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:20	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:20	53-70-3	
Fluoranthene	**45.8**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:20	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:20	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:20	193-39-5	B
Naphthalene	**2.1J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:20	91-20-3	
Phenanthrene	**8.7**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:20	85-01-8	
Pyrene	**45.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:20	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	59-130		2	01/06/15 13:10	01/19/15 17:20	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 17:20	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10209 LUMB **Lab ID: 40108983005** Collected: 11/06/14 15:19 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.1**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10210 LUMB **Lab ID: 40108983006** Collected: 11/07/14 18:21 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	12672-29-6	
PCB-1254 (Aroclor 1254)	**19.3J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11097-69-1	
PCB-1260 (Aroclor 1260)	**31.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11096-82-5	
PCB, Total	**50.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 15:51	877-09-8	
Decachlorobiphenyl (S)	82	%	55-130		1	01/05/15 13:14	01/21/15 15:51	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.66**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/08/15 22:55	7440-38-2	
Barium	**33.0**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/08/15 22:55	7440-39-3	
Cadmium	**0.034J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/08/15 22:55	7440-43-9	
Chromium	**0.39**	mg/kg	0.092	0.039	1	01/07/15 10:00	01/08/15 22:55	7440-47-3	
Copper	**8.6**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/08/15 22:55	7440-50-8	
Lead	**0.42**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/08/15 22:55	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/08/15 22:55	7439-97-6	
Nickel	**0.28**	mg/kg	0.092	0.027	1	01/07/15 10:00	01/08/15 22:55	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**2.5J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:37	90-12-0	
2-Methylnaphthalene	**3.2J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:37	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:37	83-32-9	
Acenaphthylene	**3.7**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:37	208-96-8	
Anthracene	**8.7**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:37	120-12-7	
Benzo(a)anthracene	**9.3**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:37	56-55-3	
Benzo(a)pyrene	**47.6**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:37	50-32-8	
Benzo(b)fluoranthene	**8.2**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:37	205-99-2	
Benzo(g,h,i)perylene	**20.8**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:37	191-24-2	
Benzo(k)fluoranthene	**13.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:37	207-08-9	
Chrysene	**10.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:37	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:37	53-70-3	
Fluoranthene	**12.0**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:37	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.0**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:37	193-39-5	B
Naphthalene	**4.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:37	91-20-3	
Phenanthrene	**6.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:37	85-01-8	
Pyrene	**11.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	81	%	59-130		2	01/06/15 13:10	01/19/15 17:37	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:10	01/19/15 17:37	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10210 LUMB **Lab ID: 40108983006** Collected: 11/07/14 18:21 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.6**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10212 LUMB **Lab ID: 40108983007** Collected: 11/07/14 18:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	12672-29-6	
PCB-1254 (Aroclor 1254)	**13.9J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11097-69-1	
PCB-1260 (Aroclor 1260)	**28.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11096-82-5	
PCB, Total	**41.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	69	%	45-130		1	01/05/15 13:14	01/21/15 16:09	877-09-8	
Decachlorobiphenyl (S)	69	%	55-130		1	01/05/15 13:14	01/21/15 16:09	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.69**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 23:02	7440-38-2	
Barium	**29.7**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 23:02	7440-39-3	
Cadmium	**0.027J**	mg/kg	0.097	0.0075	1	01/07/15 10:00	01/08/15 23:02	7440-43-9	
Chromium	**0.22**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 23:02	7440-47-3	
Copper	**6.8**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 23:02	7440-50-8	
Lead	**0.26**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 23:02	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:02	7439-97-6	
Nickel	**0.17**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 23:02	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:54	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:54	91-57-6	
Acenaphthene	**0.75J**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:54	83-32-9	
Acenaphthylene	**20.1**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:54	208-96-8	
Anthracene	**39.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:54	120-12-7	
Benzo(a)anthracene	**53.5**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:54	56-55-3	
Benzo(a)pyrene	**70.5**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:54	50-32-8	
Benzo(b)fluoranthene	**60.1**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:54	205-99-2	
Benzo(g,h,i)perylene	**14.6**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:54	191-24-2	
Benzo(k)fluoranthene	**64.8**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:54	207-08-9	
Chrysene	**71.7**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:54	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:54	53-70-3	
Fluoranthene	**94.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:54	206-44-0	
Fluorene	**2.2J**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:54	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.5**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:54	193-39-5	B
Naphthalene	**2.0J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:54	91-20-3	
Phenanthrene	**15.2**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:54	85-01-8	
Pyrene	**85.7**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	83	%	59-130		2	01/06/15 13:10	01/19/15 17:54	321-60-8	
Terphenyl-d14 (S)	100	%	51-130		2	01/06/15 13:10	01/19/15 17:54	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10212 LUMB **Lab ID: 40108983007** Collected: 11/07/14 18:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.1**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10213 LUMB **Lab ID: 40108983008** Collected: 11/07/14 13:56 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	12672-29-6	
PCB-1254 (Aroclor 1254)	**16.6J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11097-69-1	
PCB-1260 (Aroclor 1260)	**27.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11096-82-5	
PCB, Total	**43.7**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	93	%	45-130		1	01/05/15 13:14	01/21/15 16:27	877-09-8	
Decachlorobiphenyl (S)	92	%	55-130		1	01/05/15 13:14	01/21/15 16:27	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.86**	mg/kg	0.089	0.012	1	01/07/15 10:00	01/08/15 23:08	7440-38-2	
Barium	**49.5**	mg/kg	0.089	0.015	1	01/07/15 10:00	01/08/15 23:08	7440-39-3	
Cadmium	**0.043J**	mg/kg	0.089	0.0070	1	01/07/15 10:00	01/08/15 23:08	7440-43-9	
Chromium	**0.23**	mg/kg	0.089	0.038	1	01/07/15 10:00	01/08/15 23:08	7440-47-3	
Copper	**12.4**	mg/kg	0.089	0.026	1	01/07/15 10:00	01/08/15 23:08	7440-50-8	
Lead	**0.27**	mg/kg	0.089	0.0098	1	01/07/15 10:00	01/08/15 23:08	7439-92-1	
Mercury	**<0.0069**	mg/kg	0.018	0.0069	1	01/07/15 10:00	01/08/15 23:08	7439-97-6	
Nickel	**0.19**	mg/kg	0.089	0.027	1	01/07/15 10:00	01/08/15 23:08	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:12	90-12-0	
2-Methylnaphthalene	**2.0J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:12	91-57-6	
Acenaphthene	**2.0J**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 18:12	83-32-9	
Acenaphthylene	**18.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:12	208-96-8	
Anthracene	**53.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:12	120-12-7	
Benzo(a)anthracene	**51.7**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 18:12	56-55-3	
Benzo(a)pyrene	**82.5**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 18:12	50-32-8	
Benzo(b)fluoranthene	**53.8**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 18:12	205-99-2	
Benzo(g,h,i)perylene	**24.2**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 18:12	191-24-2	
Benzo(k)fluoranthene	**77.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:12	207-08-9	
Chrysene	**70.4**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 18:12	218-01-9	
Dibenz(a,h)anthracene	**4.6J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 18:12	53-70-3	
Fluoranthene	**69.4**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 18:12	206-44-0	
Fluorene	**3.5**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 18:12	86-73-7	
Indeno(1,2,3-cd)pyrene	**33.5**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:12	193-39-5	B
Naphthalene	**3.0J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 18:12	91-20-3	
Phenanthrene	**27.8**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 18:12	85-01-8	
Pyrene	**57.3**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 18:12	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	75	%	59-130		2	01/06/15 13:10	01/19/15 18:12	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 18:12	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10213 LUMB **Lab ID: 40108983008** Collected: 11/07/14 13:56 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.6**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.8**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10214 LUMB **Lab ID: 40108983009** Collected: 11/07/14 14:18 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	12672-29-6	
PCB-1254 (Aroclor 1254)	**37.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11097-69-1	
PCB-1260 (Aroclor 1260)	**73.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11096-82-5	
PCB, Total	**111**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 16:45	877-09-8	
Decachlorobiphenyl (S)	87	%	55-130		1	01/05/15 13:14	01/21/15 16:45	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.094	0.013	1	01/07/15 10:00	01/08/15 23:15	7440-38-2	
Barium	**33.3**	mg/kg	0.094	0.016	1	01/07/15 10:00	01/08/15 23:15	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.094	0.0074	1	01/07/15 10:00	01/08/15 23:15	7440-43-9	
Chromium	**0.36**	mg/kg	0.094	0.041	1	01/07/15 10:00	01/08/15 23:15	7440-47-3	
Copper	**12.6**	mg/kg	0.094	0.027	1	01/07/15 10:00	01/08/15 23:15	7440-50-8	
Lead	**0.48**	mg/kg	0.094	0.010	1	01/07/15 10:00	01/08/15 23:15	7439-92-1	
Mercury	**0.0081J**	mg/kg	0.019	0.0072	1	01/07/15 10:00	01/08/15 23:15	7439-97-6	
Nickel	**0.30**	mg/kg	0.094	0.028	1	01/07/15 10:00	01/08/15 23:15	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<6.0**	ug/kg	13.3	6.0	8	01/06/15 13:10	01/28/15 10:31	90-12-0	
2-Methylnaphthalene	**<5.7**	ug/kg	13.3	5.7	8	01/06/15 13:10	01/28/15 10:31	91-57-6	
Acenaphthene	**<2.2**	ug/kg	13.3	2.2	8	01/06/15 13:10	01/28/15 10:31	83-32-9	
Acenaphthylene	**22.0**	ug/kg	13.3	4.8	8	01/06/15 13:10	01/28/15 10:31	208-96-8	
Anthracene	**39.5**	ug/kg	13.3	5.9	8	01/06/15 13:10	01/28/15 10:31	120-12-7	
Benzo(a)anthracene	**50.4**	ug/kg	13.3	2.7	8	01/06/15 13:10	01/28/15 10:31	56-55-3	
Benzo(a)pyrene	**52.2**	ug/kg	13.3	3.7	8	01/06/15 13:10	01/28/15 10:31	50-32-8	
Benzo(b)fluoranthene	**54.2**	ug/kg	13.3	2.3	8	01/06/15 13:10	01/28/15 10:31	205-99-2	
Benzo(g,h,i)perylene	**34.4**	ug/kg	13.3	4.4	8	01/06/15 13:10	01/28/15 10:31	191-24-2	
Benzo(k)fluoranthene	**60.0**	ug/kg	13.3	4.9	8	01/06/15 13:10	01/28/15 10:31	207-08-9	
Chrysene	**81.6**	ug/kg	13.3	3.4	8	01/06/15 13:10	01/28/15 10:31	218-01-9	
Dibenz(a,h)anthracene	**6.3J**	ug/kg	26.7	3.6	8	01/06/15 13:10	01/28/15 10:31	53-70-3	
Fluoranthene	**111**	ug/kg	13.3	3.5	8	01/06/15 13:10	01/28/15 10:31	206-44-0	
Fluorene	**<7.4**	ug/kg	13.3	7.4	8	01/06/15 13:10	01/28/15 10:31	86-73-7	
Indeno(1,2,3-cd)pyrene	**31.5**	ug/kg	13.3	5.8	8	01/06/15 13:10	01/28/15 10:31	193-39-5	B
Naphthalene	**12.2J**	ug/kg	13.3	3.1	8	01/06/15 13:10	01/28/15 10:31	91-20-3	
Phenanthrene	**19.8**	ug/kg	13.3	1.7	8	01/06/15 13:10	01/28/15 10:31	85-01-8	
Pyrene	**97.7**	ug/kg	13.3	2.1	8	01/06/15 13:10	01/28/15 10:31	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%	59-130		8	01/06/15 13:10	01/28/15 10:31	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		8	01/06/15 13:10	01/28/15 10:31	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10214 LUMB **Lab ID: 40108983009** Collected: 11/07/14 14:18 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.3**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 102214 LUMB **Lab ID: 40108983010** Collected: 10/22/14 15:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	94	%	45-130		1	01/05/15 13:14	01/21/15 17:38	877-09-8	
Decachlorobiphenyl (S)	94	%	55-130		1	01/05/15 13:14	01/21/15 17:38	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.19**	mg/kg	0.098	0.013	1	01/07/15 10:00	01/08/15 23:21	7440-38-2	
Barium	**9.6**	mg/kg	0.098	0.016	1	01/07/15 10:00	01/08/15 23:21	7440-39-3	
Cadmium	**0.032J**	mg/kg	0.098	0.0076	1	01/07/15 10:00	01/08/15 23:21	7440-43-9	
Chromium	**0.067J**	mg/kg	0.098	0.042	1	01/07/15 10:00	01/08/15 23:21	7440-47-3	
Copper	**1.1**	mg/kg	0.098	0.028	1	01/07/15 10:00	01/08/15 23:21	7440-50-8	
Lead	**0.061J**	mg/kg	0.098	0.011	1	01/07/15 10:00	01/08/15 23:21	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.020	0.0075	1	01/07/15 10:00	01/08/15 23:21	7439-97-6	
Nickel	**0.066J**	mg/kg	0.098	0.029	1	01/07/15 10:00	01/08/15 23:21	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:46	90-12-0	
2-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:46	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 18:46	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:46	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:46	120-12-7	
Benzo(a)anthracene	**1.3J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 18:46	56-55-3	
Benzo(a)pyrene	**19.6**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 18:46	50-32-8	
Benzo(b)fluoranthene	**1.1J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 18:46	205-99-2	
Benzo(g,h,i)perylene	**30.8**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 18:46	191-24-2	
Benzo(k)fluoranthene	**1.2J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:46	207-08-9	
Chrysene	**3.0J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 18:46	218-01-9	
Dibenz(a,h)anthracene	**1.4J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 18:46	53-70-3	
Fluoranthene	**4.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 18:46	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 18:46	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.1**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:46	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 18:46	91-20-3	
Phenanthrene	**4.5**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 18:46	85-01-8	
Pyrene	**4.6**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 18:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	85	%	59-130		2	01/06/15 13:10	01/19/15 18:46	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 18:46	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 102214 LUMB **Lab ID: 40108983010** Collected: 10/22/14 15:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.2**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.7**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 102214 LUMB **Lab ID: 40108983011** Collected: 11/20/14 08:33 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	96	%	45-130		1	01/05/15 13:14	01/21/15 17:56	877-09-8	
Decachlorobiphenyl (S)	95	%	55-130		1	01/05/15 13:14	01/21/15 17:56	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.096	0.013	1	01/07/15 10:00	01/08/15 23:41	7440-38-2	
Barium	**10.7**	mg/kg	0.096	0.016	1	01/07/15 10:00	01/08/15 23:41	7440-39-3	
Cadmium	**0.021J**	mg/kg	0.096	0.0075	1	01/07/15 10:00	01/08/15 23:41	7440-43-9	
Chromium	**0.13**	mg/kg	0.096	0.041	1	01/07/15 10:00	01/08/15 23:41	7440-47-3	
Copper	**3.6**	mg/kg	0.096	0.028	1	01/07/15 10:00	01/08/15 23:41	7440-50-8	
Lead	**0.087J**	mg/kg	0.096	0.010	1	01/07/15 10:00	01/08/15 23:41	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:41	7439-97-6	
Nickel	**0.090J**	mg/kg	0.096	0.029	1	01/07/15 10:00	01/08/15 23:41	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:04	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:04	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 19:04	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:04	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:04	120-12-7	
Benzo(a)anthracene	**0.91J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 19:04	56-55-3	
Benzo(a)pyrene	**16.1**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 19:04	50-32-8	
Benzo(b)fluoranthene	**1.2J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 19:04	205-99-2	
Benzo(g,h,i)perylene	**20.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 19:04	191-24-2	
Benzo(k)fluoranthene	**1.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:04	207-08-9	
Chrysene	**1.5J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 19:04	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 19:04	53-70-3	
Fluoranthene	**2.5J**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 19:04	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 19:04	86-73-7	
Indeno(1,2,3-cd)pyrene	**18.2**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:04	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 19:04	91-20-3	
Phenanthrene	**5.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 19:04	85-01-8	
Pyrene	**2.3J**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 19:04	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	76	%	59-130		2	01/06/15 13:10	01/19/15 19:04	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 19:04	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 102214 LUMB **Lab ID: 40108983011** Collected: 11/20/14 08:33 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10215 LUMB **Lab ID: 40108983012** Collected: 11/20/14 10:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	12672-29-6	
PCB-1254 (Aroclor 1254)	**15.5J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11097-69-1	
PCB-1260 (Aroclor 1260)	**19.3J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11096-82-5	
PCB, Total	**34.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	93	%	45-130		1	01/05/15 13:14	01/21/15 18:14	877-09-8	
Decachlorobiphenyl (S)	97	%	55-130		1	01/05/15 13:14	01/21/15 18:14	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.82**	mg/kg	0.098	0.013	1	01/07/15 10:00	01/08/15 23:48	7440-38-2	
Barium	**16.5**	mg/kg	0.098	0.016	1	01/07/15 10:00	01/08/15 23:48	7440-39-3	
Cadmium	**0.031J**	mg/kg	0.098	0.0077	1	01/07/15 10:00	01/08/15 23:48	7440-43-9	
Chromium	**0.29**	mg/kg	0.098	0.042	1	01/07/15 10:00	01/08/15 23:48	7440-47-3	
Copper	**5.2**	mg/kg	0.098	0.028	1	01/07/15 10:00	01/08/15 23:48	7440-50-8	
Lead	**0.26**	mg/kg	0.098	0.011	1	01/07/15 10:00	01/08/15 23:48	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.020	0.0075	1	01/07/15 10:00	01/08/15 23:48	7439-97-6	
Nickel	**0.25**	mg/kg	0.098	0.029	1	01/07/15 10:00	01/08/15 23:48	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<3.0**	ug/kg	6.7	3.0	4	01/06/15 13:10	01/28/15 10:48	90-12-0	
2-Methylnaphthalene	**<2.8**	ug/kg	6.7	2.8	4	01/06/15 13:10	01/28/15 10:48	91-57-6	
Acenaphthene	**<1.1**	ug/kg	6.7	1.1	4	01/06/15 13:10	01/28/15 10:48	83-32-9	
Acenaphthylene	**6.0J**	ug/kg	6.7	2.4	4	01/06/15 13:10	01/28/15 10:48	208-96-8	
Anthracene	**13.3**	ug/kg	6.7	3.0	4	01/06/15 13:10	01/28/15 10:48	120-12-7	
Benzo(a)anthracene	**42.1**	ug/kg	6.7	1.4	4	01/06/15 13:10	01/28/15 10:48	56-55-3	
Benzo(a)pyrene	**56.4**	ug/kg	6.7	1.9	4	01/06/15 13:10	01/28/15 10:48	50-32-8	
Benzo(b)fluoranthene	**46.2**	ug/kg	6.7	1.2	4	01/06/15 13:10	01/28/15 10:48	205-99-2	
Benzo(g,h,i)perylene	**31.1**	ug/kg	6.7	2.2	4	01/06/15 13:10	01/28/15 10:48	191-24-2	
Benzo(k)fluoranthene	**54.0**	ug/kg	6.7	2.5	4	01/06/15 13:10	01/28/15 10:48	207-08-9	
Chrysene	**56.3**	ug/kg	6.7	1.7	4	01/06/15 13:10	01/28/15 10:48	218-01-9	
Dibenz(a,h)anthracene	**3.6J**	ug/kg	13.3	1.8	4	01/06/15 13:10	01/28/15 10:48	53-70-3	
Fluoranthene	**84.1**	ug/kg	6.7	1.7	4	01/06/15 13:10	01/28/15 10:48	206-44-0	
Fluorene	**<3.7**	ug/kg	6.7	3.7	4	01/06/15 13:10	01/28/15 10:48	86-73-7	
Indeno(1,2,3-cd)pyrene	**14.0**	ug/kg	6.7	2.9	4	01/06/15 13:10	01/28/15 10:48	193-39-5	B
Naphthalene	**4.0J**	ug/kg	6.7	1.5	4	01/06/15 13:10	01/28/15 10:48	91-20-3	
Phenanthrene	**9.0**	ug/kg	6.7	0.84	4	01/06/15 13:10	01/28/15 10:48	85-01-8	
Pyrene	**84.4**	ug/kg	6.7	1.0	4	01/06/15 13:10	01/28/15 10:48	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	98	%	59-130		4	01/06/15 13:10	01/28/15 10:48	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		4	01/06/15 13:10	01/28/15 10:48	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10215 LUMB **Lab ID: 40108983012** Collected: 11/20/14 10:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10216 LUMB **Lab ID: 40108983013** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	12672-29-6	
PCB-1254 (Aroclor 1254)	**53.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11097-69-1	
PCB-1260 (Aroclor 1260)	**75.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11096-82-5	
PCB, Total	**129**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	99	%	45-130		1	01/05/15 13:14	01/21/15 18:32	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 13:14	01/21/15 18:32	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.43**	mg/kg	0.096	0.013	1	01/07/15 10:00	01/08/15 23:54	7440-38-2	
Barium	**13.1**	mg/kg	0.096	0.016	1	01/07/15 10:00	01/08/15 23:54	7440-39-3	
Cadmium	**0.043J**	mg/kg	0.096	0.0075	1	01/07/15 10:00	01/08/15 23:54	7440-43-9	
Chromium	**0.46**	mg/kg	0.096	0.041	1	01/07/15 10:00	01/08/15 23:54	7440-47-3	
Copper	**4.7**	mg/kg	0.096	0.028	1	01/07/15 10:00	01/08/15 23:54	7440-50-8	
Lead	**0.34**	mg/kg	0.096	0.011	1	01/07/15 10:00	01/08/15 23:54	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:54	7439-97-6	
Nickel	**0.28**	mg/kg	0.096	0.029	1	01/07/15 10:00	01/08/15 23:54	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:38	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:38	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 19:38	83-32-9	
Acenaphthylene	**3.3J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:38	208-96-8	
Anthracene	**6.2**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:38	120-12-7	
Benzo(a)anthracene	**18.6**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 19:38	56-55-3	
Benzo(a)pyrene	**54.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 19:38	50-32-8	
Benzo(b)fluoranthene	**43.8**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 19:38	205-99-2	
Benzo(g,h,i)perylene	**20.0**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 19:38	191-24-2	
Benzo(k)fluoranthene	**32.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:38	207-08-9	
Chrysene	**34.1**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 19:38	218-01-9	
Dibenz(a,h)anthracene	**1.7J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 19:38	53-70-3	
Fluoranthene	**39.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 19:38	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 19:38	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.7**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:38	193-39-5	B
Naphthalene	**2.2J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 19:38	91-20-3	
Phenanthrene	**11.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 19:38	85-01-8	
Pyrene	**36.5**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 19:38	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	87	%	59-130		2	01/06/15 13:10	01/19/15 19:38	321-60-8	
Terphenyl-d14 (S)	103	%	51-130		2	01/06/15 13:10	01/19/15 19:38	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10216 LUMB **Lab ID: 40108983013** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10217 LUMB **Lab ID: 40108983014** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	12672-29-6	
PCB-1254 (Aroclor 1254)	**15.8J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11097-69-1	
PCB-1260 (Aroclor 1260)	**18.1J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11096-82-5	
PCB, Total	**33.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 18:49	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 18:49	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.86**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/09/15 00:01	7440-38-2	
Barium	**15.2**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/09/15 00:01	7440-39-3	
Cadmium	**0.026J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/09/15 00:01	7440-43-9	
Chromium	**0.29**	mg/kg	0.092	0.039	1	01/07/15 10:00	01/09/15 00:01	7440-47-3	
Copper	**4.5**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/09/15 00:01	7440-50-8	
Lead	**0.26**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/09/15 00:01	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/09/15 00:01	7439-97-6	
Nickel	**0.22**	mg/kg	0.092	0.027	1	01/07/15 10:00	01/09/15 00:01	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<6.0**	ug/kg	13.3	6.0	8	01/06/15 13:10	01/28/15 11:06	90-12-0	
2-Methylnaphthalene	**<5.7**	ug/kg	13.3	5.7	8	01/06/15 13:10	01/28/15 11:06	91-57-6	
Acenaphthene	**<2.2**	ug/kg	13.3	2.2	8	01/06/15 13:10	01/28/15 11:06	83-32-9	
Acenaphthylene	**8.0J**	ug/kg	13.3	4.8	8	01/06/15 13:10	01/28/15 11:06	208-96-8	
Anthracene	**16.8**	ug/kg	13.3	5.9	8	01/06/15 13:10	01/28/15 11:06	120-12-7	
Benzo(a)anthracene	**45.5**	ug/kg	13.3	2.7	8	01/06/15 13:10	01/28/15 11:06	56-55-3	
Benzo(a)pyrene	**40.4**	ug/kg	13.3	3.7	8	01/06/15 13:10	01/28/15 11:06	50-32-8	
Benzo(b)fluoranthene	**60.1**	ug/kg	13.3	2.3	8	01/06/15 13:10	01/28/15 11:06	205-99-2	
Benzo(g,h,i)perylene	**33.8**	ug/kg	13.3	4.4	8	01/06/15 13:10	01/28/15 11:06	191-24-2	
Benzo(k)fluoranthene	**59.8**	ug/kg	13.3	4.9	8	01/06/15 13:10	01/28/15 11:06	207-08-9	
Chrysene	**69.6**	ug/kg	13.3	3.4	8	01/06/15 13:10	01/28/15 11:06	218-01-9	
Dibenz(a,h)anthracene	**4.0J**	ug/kg	26.7	3.6	8	01/06/15 13:10	01/28/15 11:06	53-70-3	
Fluoranthene	**108**	ug/kg	13.3	3.5	8	01/06/15 13:10	01/28/15 11:06	206-44-0	
Fluorene	**<7.4**	ug/kg	13.3	7.4	8	01/06/15 13:10	01/28/15 11:06	86-73-7	
Indeno(1,2,3-cd)pyrene	**17.2**	ug/kg	13.3	5.8	8	01/06/15 13:10	01/28/15 11:06	193-39-5	B
Naphthalene	**5.6J**	ug/kg	13.3	3.1	8	01/06/15 13:10	01/28/15 11:06	91-20-3	
Phenanthrene	**10.1J**	ug/kg	13.3	1.7	8	01/06/15 13:10	01/28/15 11:06	85-01-8	
Pyrene	**99.7**	ug/kg	13.3	2.1	8	01/06/15 13:10	01/28/15 11:06	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	99	%	59-130		8	01/06/15 13:10	01/28/15 11:06	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		8	01/06/15 13:10	01/28/15 11:06	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10217 LUMB **Lab ID: 40108983014** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.0**	%	0.10	0.10	1		01/07/15 05:42		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10218 LUMB **Lab ID: 40108983015** Collected: 11/20/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	12672-29-6	
PCB-1254 (Aroclor 1254)	**65.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11097-69-1	
PCB-1260 (Aroclor 1260)	**105**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11096-82-5	
PCB, Total	**171**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 13:14	01/21/15 19:07	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 19:07	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.44**	mg/kg	0.093	0.013	1	01/07/15 10:00	01/09/15 00:07	7440-38-2	
Barium	**15.2**	mg/kg	0.093	0.016	1	01/07/15 10:00	01/09/15 00:07	7440-39-3	
Cadmium	**0.062J**	mg/kg	0.093	0.0073	1	01/07/15 10:00	01/09/15 00:07	7440-43-9	
Chromium	**0.59**	mg/kg	0.093	0.040	1	01/07/15 10:00	01/09/15 00:07	7440-47-3	
Copper	**4.9**	mg/kg	0.093	0.027	1	01/07/15 10:00	01/09/15 00:07	7440-50-8	
Lead	**0.51**	mg/kg	0.093	0.010	1	01/07/15 10:00	01/09/15 00:07	7439-92-1	
Mercury	**<0.0072**	mg/kg	0.019	0.0072	1	01/07/15 10:00	01/09/15 00:07	7439-97-6	
Nickel	**0.35**	mg/kg	0.093	0.028	1	01/07/15 10:00	01/09/15 00:07	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<9.4**	ug/kg	20.8	9.4	12.5	01/06/15 13:10	01/28/15 11:23	90-12-0	
2-Methylnaphthalene	**<8.9**	ug/kg	20.8	8.9	12.5	01/06/15 13:10	01/28/15 11:23	91-57-6	
Acenaphthene	**<3.4**	ug/kg	20.8	3.4	12.5	01/06/15 13:10	01/28/15 11:23	83-32-9	
Acenaphthylene	**<7.6**	ug/kg	20.8	7.6	12.5	01/06/15 13:10	01/28/15 11:23	208-96-8	
Anthracene	**<9.3**	ug/kg	20.8	9.3	12.5	01/06/15 13:10	01/28/15 11:23	120-12-7	
Benzo(a)anthracene	**80.9**	ug/kg	20.8	4.2	12.5	01/06/15 13:10	01/28/15 11:23	56-55-3	
Benzo(a)pyrene	**45.3**	ug/kg	20.8	5.8	12.5	01/06/15 13:10	01/28/15 11:23	50-32-8	
Benzo(b)fluoranthene	**178**	ug/kg	20.8	3.6	12.5	01/06/15 13:10	01/28/15 11:23	205-99-2	
Benzo(g,h,i)perylene	**66.9**	ug/kg	20.8	6.9	12.5	01/06/15 13:10	01/28/15 11:23	191-24-2	
Benzo(k)fluoranthene	**122**	ug/kg	20.8	7.7	12.5	01/06/15 13:10	01/28/15 11:23	207-08-9	
Chrysene	**160**	ug/kg	20.8	5.3	12.5	01/06/15 13:10	01/28/15 11:23	218-01-9	
Dibenz(a,h)anthracene	**10.6J**	ug/kg	41.7	5.6	12.5	01/06/15 13:10	01/28/15 11:23	53-70-3	
Fluoranthene	**216**	ug/kg	20.8	5.4	12.5	01/06/15 13:10	01/28/15 11:23	206-44-0	
Fluorene	**<11.5**	ug/kg	20.8	11.5	12.5	01/06/15 13:10	01/28/15 11:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**48.2**	ug/kg	20.8	9.0	12.5	01/06/15 13:10	01/28/15 11:23	193-39-5	B
Naphthalene	**<4.8**	ug/kg	20.8	4.8	12.5	01/06/15 13:10	01/28/15 11:23	91-20-3	
Phenanthrene	**29.8**	ug/kg	20.8	2.6	12.5	01/06/15 13:10	01/28/15 11:23	85-01-8	
Pyrene	**237**	ug/kg	20.8	3.3	12.5	01/06/15 13:10	01/28/15 11:23	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		12.5	01/06/15 13:10	01/28/15 11:23	321-60-8	
Terphenyl-d14 (S)	84	%	51-130		12.5	01/06/15 13:10	01/28/15 11:23	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10218 LUMB **Lab ID: 40108983015** Collected: 11/20/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.5**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.7**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10219 LUMB **Lab ID: 40108983016** Collected: 11/21/14 17:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	100	%	45-130		1	01/05/15 13:14	01/21/15 19:25	877-09-8	
Decachlorobiphenyl (S)	102	%	55-130		1	01/05/15 13:14	01/21/15 19:25	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.37**	mg/kg	0.095	0.013	1	01/07/15 10:00	01/09/15 00:14	7440-38-2	
Barium	**13.1**	mg/kg	0.095	0.016	1	01/07/15 10:00	01/09/15 00:14	7440-39-3	
Cadmium	**0.020J**	mg/kg	0.095	0.0074	1	01/07/15 10:00	01/09/15 00:14	7440-43-9	
Chromium	**0.18**	mg/kg	0.095	0.041	1	01/07/15 10:00	01/09/15 00:14	7440-47-3	
Copper	**3.4**	mg/kg	0.095	0.027	1	01/07/15 10:00	01/09/15 00:14	7440-50-8	
Lead	**0.36**	mg/kg	0.095	0.010	1	01/07/15 10:00	01/09/15 00:14	7439-92-1	
Mercury	**<0.0073**	mg/kg	0.019	0.0073	1	01/07/15 10:00	01/09/15 00:14	7439-97-6	
Nickel	**0.19**	mg/kg	0.095	0.029	1	01/07/15 10:00	01/09/15 00:14	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:30	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:30	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 20:30	83-32-9	
Acenaphthylene	**5.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:30	208-96-8	
Anthracene	**9.4**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:30	120-12-7	
Benzo(a)anthracene	**18.5**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 20:30	56-55-3	
Benzo(a)pyrene	**40.8**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 20:30	50-32-8	
Benzo(b)fluoranthene	**21.7**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 20:30	205-99-2	
Benzo(g,h,i)perylene	**14.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 20:30	191-24-2	
Benzo(k)fluoranthene	**29.8**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:30	207-08-9	
Chrysene	**24.6**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 20:30	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 20:30	53-70-3	
Fluoranthene	**30.0**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 20:30	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 20:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.8**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:30	193-39-5	B
Naphthalene	**4.4**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 20:30	91-20-3	
Phenanthrene	**5.7**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 20:30	85-01-8	
Pyrene	**30.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 20:30	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	87	%	59-130		2	01/06/15 13:10	01/19/15 20:30	321-60-8	
Terphenyl-d14 (S)	101	%	51-130		2	01/06/15 13:10	01/19/15 20:30	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10219 LUMB **Lab ID: 40108983016** Collected: 11/21/14 17:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**94.1**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.87**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10220 LUMB **Lab ID: 40108983017** Collected: 11/21/14 10:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	12672-29-6	
PCB-1254 (Aroclor 1254)	**18.2J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11097-69-1	
PCB-1260 (Aroclor 1260)	**25.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11096-82-5	
PCB, Total	**44.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	97	%	45-130		1	01/05/15 13:14	01/21/15 19:43	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 13:14	01/21/15 19:43	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.70**	mg/kg	0.087	0.012	1	01/07/15 10:00	01/09/15 00:20	7440-38-2	
Barium	**17.5**	mg/kg	0.087	0.015	1	01/07/15 10:00	01/09/15 00:20	7440-39-3	
Cadmium	**0.027J**	mg/kg	0.087	0.0068	1	01/07/15 10:00	01/09/15 00:20	7440-43-9	
Chromium	**0.49**	mg/kg	0.087	0.037	1	01/07/15 10:00	01/09/15 00:20	7440-47-3	
Copper	**4.6**	mg/kg	0.087	0.025	1	01/07/15 10:00	01/09/15 00:20	7440-50-8	
Lead	**0.47**	mg/kg	0.087	0.0095	1	01/07/15 10:00	01/09/15 00:20	7439-92-1	
Mercury	**<0.0067**	mg/kg	0.017	0.0067	1	01/07/15 10:00	01/09/15 00:20	7439-97-6	
Nickel	**0.33**	mg/kg	0.087	0.026	1	01/07/15 10:00	01/09/15 00:20	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:47	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:47	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 20:47	83-32-9	
Acenaphthylene	**8.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:47	208-96-8	
Anthracene	**18.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:47	120-12-7	
Benzo(a)anthracene	**39.0**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 20:47	56-55-3	
Benzo(a)pyrene	**57.4**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 20:47	50-32-8	
Benzo(b)fluoranthene	**34.4**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 20:47	205-99-2	
Benzo(g,h,i)perylene	**19.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 20:47	191-24-2	
Benzo(k)fluoranthene	**46.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:47	207-08-9	
Chrysene	**52.5**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 20:47	218-01-9	
Dibenz(a,h)anthracene	**1.8J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 20:47	53-70-3	
Fluoranthene	**76.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 20:47	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 20:47	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.6**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:47	193-39-5	B
Naphthalene	**4.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 20:47	91-20-3	
Phenanthrene	**9.3**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 20:47	85-01-8	
Pyrene	**68.6**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 20:47	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 20:47	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		2	01/06/15 13:10	01/19/15 20:47	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10220 LUMB **Lab ID: 40108983017** Collected: 11/21/14 10:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.2**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10221 LUMB **Lab ID: 40108983018** Collected: 11/21/14 13:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 13:14	01/21/15 20:01	877-09-8	
Decachlorobiphenyl (S)	88	%	55-130		1	01/05/15 13:14	01/21/15 20:01	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.62**	mg/kg	0.091	0.012	1	01/07/15 10:00	01/09/15 00:27	7440-38-2	
Barium	**16.0**	mg/kg	0.091	0.015	1	01/07/15 10:00	01/09/15 00:27	7440-39-3	
Cadmium	**0.029J**	mg/kg	0.091	0.0071	1	01/07/15 10:00	01/09/15 00:27	7440-43-9	
Chromium	**0.26**	mg/kg	0.091	0.039	1	01/07/15 10:00	01/09/15 00:27	7440-47-3	
Copper	**3.5**	mg/kg	0.091	0.026	1	01/07/15 10:00	01/09/15 00:27	7440-50-8	
Lead	**0.49**	mg/kg	0.091	0.010	1	01/07/15 10:00	01/09/15 00:27	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/09/15 00:27	7439-97-6	
Nickel	**0.19**	mg/kg	0.091	0.027	1	01/07/15 10:00	01/09/15 00:27	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.6J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:05	90-12-0	
2-Methylnaphthalene	**2.4J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:05	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 21:05	83-32-9	
Acenaphthylene	**7.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:05	208-96-8	
Anthracene	**13.3**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:05	120-12-7	
Benzo(a)anthracene	**38.8**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 21:05	56-55-3	
Benzo(a)pyrene	**65.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 21:05	50-32-8	
Benzo(b)fluoranthene	**56.3**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 21:05	205-99-2	
Benzo(g,h,i)perylene	**14.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 21:05	191-24-2	
Benzo(k)fluoranthene	**58.7**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:05	207-08-9	
Chrysene	**43.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 21:05	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 21:05	53-70-3	
Fluoranthene	**60.5**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 21:05	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 21:05	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:05	193-39-5	B
Naphthalene	**6.0**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 21:05	91-20-3	
Phenanthrene	**9.5**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 21:05	85-01-8	
Pyrene	**64.7**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 21:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	77	%	59-130		2	01/06/15 13:10	01/19/15 21:05	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 21:05	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10221 LUMB **Lab ID: 40108983018** Collected: 11/21/14 13:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.4**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.97**	%			1		01/08/15 10:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 111214 LUMB **Lab ID: 40108983019** Collected: 11/12/14 15:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	102	%	45-130		1	01/05/15 13:14	01/21/15 20:18	877-09-8	
Decachlorobiphenyl (S)	101	%	55-130		1	01/05/15 13:14	01/21/15 20:18	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.18**	mg/kg	0.089	0.012	1	01/07/15 10:00	01/09/15 00:33	7440-38-2	
Barium	**10.7**	mg/kg	0.089	0.015	1	01/07/15 10:00	01/09/15 00:33	7440-39-3	
Cadmium	**0.028J**	mg/kg	0.089	0.0070	1	01/07/15 10:00	01/09/15 00:33	7440-43-9	
Chromium	**0.11**	mg/kg	0.089	0.038	1	01/07/15 10:00	01/09/15 00:33	7440-47-3	
Copper	**1.8**	mg/kg	0.089	0.026	1	01/07/15 10:00	01/09/15 00:33	7440-50-8	
Lead	**0.058J**	mg/kg	0.089	0.0098	1	01/07/15 10:00	01/09/15 00:33	7439-92-1	
Mercury	**<0.0069**	mg/kg	0.018	0.0069	1	01/07/15 10:00	01/09/15 00:33	7439-97-6	
Nickel	**0.063J**	mg/kg	0.089	0.027	1	01/07/15 10:00	01/09/15 00:33	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:22	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:22	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 21:22	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:22	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:22	120-12-7	
Benzo(a)anthracene	**1.5J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 21:22	56-55-3	
Benzo(a)pyrene	**13.3**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 21:22	50-32-8	
Benzo(b)fluoranthene	**1.6J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 21:22	205-99-2	
Benzo(g,h,i)perylene	**26.1**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 21:22	191-24-2	
Benzo(k)fluoranthene	**1.3J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:22	207-08-9	
Chrysene	**2.8J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 21:22	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 21:22	53-70-3	
Fluoranthene	**4.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 21:22	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 21:22	86-73-7	
Indeno(1,2,3-cd)pyrene	**22.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:22	193-39-5	B
Naphthalene	**1.2J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 21:22	91-20-3	
Phenanthrene	**4.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 21:22	85-01-8	
Pyrene	**4.3**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 21:22	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		2	01/06/15 13:10	01/19/15 21:22	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 21:22	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 111214 LUMB **Lab ID: 40108983019** Collected: 11/12/14 15:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.7**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.0**	%			1		01/08/15 10:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 111214 LUMB **Lab ID: 40108983020** Collected: 12/11/14 12:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	101	%	45-130		1	01/05/15 13:14	01/21/15 20:36	877-09-8	
Decachlorobiphenyl (S)	103	%	55-130		1	01/05/15 13:14	01/21/15 20:36	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.6**	mg/kg	0.10	0.013	1	01/07/15 10:00	01/09/15 00:40	7440-38-2	
Barium	**18.6**	mg/kg	0.10	0.017	1	01/07/15 10:00	01/09/15 00:40	7440-39-3	
Cadmium	**0.034J**	mg/kg	0.10	0.0078	1	01/07/15 10:00	01/09/15 00:40	7440-43-9	
Chromium	**0.11**	mg/kg	0.10	0.043	1	01/07/15 10:00	01/09/15 00:40	7440-47-3	
Copper	**4.0**	mg/kg	0.10	0.029	1	01/07/15 10:00	01/09/15 00:40	7440-50-8	
Lead	**0.10**	mg/kg	0.10	0.011	1	01/07/15 10:00	01/09/15 00:40	7439-92-1	
Mercury	**<0.0077**	mg/kg	0.020	0.0077	1	01/07/15 10:00	01/09/15 00:40	7439-97-6	
Nickel	**0.10**	mg/kg	0.10	0.030	1	01/07/15 10:00	01/09/15 00:40	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/19/15 21:39	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/19/15 21:39	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/19/15 21:39	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/19/15 21:39	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/19/15 21:39	120-12-7	
Benzo(a)anthracene	**0.78J**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/19/15 21:39	56-55-3	
Benzo(a)pyrene	**17.5**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/19/15 21:39	50-32-8	
Benzo(b)fluoranthene	**1.3J**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/19/15 21:39	205-99-2	
Benzo(g,h,i)perylene	**22.0**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/19/15 21:39	191-24-2	
Benzo(k)fluoranthene	**1.3J**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/19/15 21:39	207-08-9	
Chrysene	**1.4J**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/19/15 21:39	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/19/15 21:39	53-70-3	
Fluoranthene	**2.1J**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/19/15 21:39	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/19/15 21:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/19/15 21:39	193-39-5	B
Naphthalene	**1.0J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/19/15 21:39	91-20-3	
Phenanthrene	**3.3J**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/19/15 21:39	85-01-8	
Pyrene	**1.8J**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/19/15 21:39	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		2	01/06/15 13:36	01/19/15 21:39	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:36	01/19/15 21:39	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 111214 LUMB **Lab ID: 40108983020** Collected: 12/11/14 12:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.3**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10222 LUMB **Lab ID: 40108983021** Collected: 12/11/14 12:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	12672-29-6	
PCB-1254 (Aroclor 1254)	**14.6J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11097-69-1	
PCB-1260 (Aroclor 1260)	**13.9J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11096-82-5	
PCB, Total	**28.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	77	%	45-130		1	01/05/15 10:50	01/13/15 11:30	877-09-8	
Decachlorobiphenyl (S)	93	%	55-130		1	01/05/15 10:50	01/13/15 11:30	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.10	0.013	1	01/08/15 08:42	01/08/15 17:47	7440-38-2	
Barium	**20.2**	mg/kg	0.10	0.017	1	01/08/15 08:42	01/08/15 17:47	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.10	0.0078	1	01/08/15 08:42	01/08/15 17:47	7440-43-9	
Chromium	**0.30**	mg/kg	0.10	0.043	1	01/08/15 08:42	01/08/15 17:47	7440-47-3	
Copper	**4.4**	mg/kg	0.10	0.029	1	01/08/15 08:42	01/08/15 17:47	7440-50-8	
Lead	**0.30**	mg/kg	0.10	0.011	1	01/08/15 08:42	01/08/15 17:47	7439-92-1	
Mercury	**0.0084J**	mg/kg	0.020	0.0077	1	01/08/15 08:42	01/08/15 17:47	7439-97-6	
Nickel	**0.27**	mg/kg	0.10	0.030	1	01/08/15 08:42	01/08/15 17:47	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<3.0**	ug/kg	6.7	3.0	4	01/06/15 13:36	01/28/15 11:40	90-12-0	
2-Methylnaphthalene	**<2.8**	ug/kg	6.7	2.8	4	01/06/15 13:36	01/28/15 11:40	91-57-6	
Acenaphthene	**<1.1**	ug/kg	6.7	1.1	4	01/06/15 13:36	01/28/15 11:40	83-32-9	
Acenaphthylene	**3.8J**	ug/kg	6.7	2.4	4	01/06/15 13:36	01/28/15 11:40	208-96-8	
Anthracene	**10.9**	ug/kg	6.7	3.0	4	01/06/15 13:36	01/28/15 11:40	120-12-7	
Benzo(a)anthracene	**39.2**	ug/kg	6.7	1.4	4	01/06/15 13:36	01/28/15 11:40	56-55-3	
Benzo(a)pyrene	**20.8**	ug/kg	6.7	1.9	4	01/06/15 13:36	01/28/15 11:40	50-32-8	
Benzo(b)fluoranthene	**40.9**	ug/kg	6.7	1.2	4	01/06/15 13:36	01/28/15 11:40	205-99-2	
Benzo(g,h,i)perylene	**28.7**	ug/kg	6.7	2.2	4	01/06/15 13:36	01/28/15 11:40	191-24-2	
Benzo(k)fluoranthene	**44.4**	ug/kg	6.7	2.5	4	01/06/15 13:36	01/28/15 11:40	207-08-9	
Chrysene	**53.5**	ug/kg	6.7	1.7	4	01/06/15 13:36	01/28/15 11:40	218-01-9	
Dibenz(a,h)anthracene	**2.5J**	ug/kg	13.3	1.8	4	01/06/15 13:36	01/28/15 11:40	53-70-3	
Fluoranthene	**76.1**	ug/kg	6.7	1.7	4	01/06/15 13:36	01/28/15 11:40	206-44-0	
Fluorene	**<3.7**	ug/kg	6.7	3.7	4	01/06/15 13:36	01/28/15 11:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**10.0**	ug/kg	6.7	2.9	4	01/06/15 13:36	01/28/15 11:40	193-39-5	B
Naphthalene	**<1.5**	ug/kg	6.7	1.5	4	01/06/15 13:36	01/28/15 11:40	91-20-3	
Phenanthrene	**6.1J**	ug/kg	6.7	0.84	4	01/06/15 13:36	01/28/15 11:40	85-01-8	
Pyrene	**73.8**	ug/kg	6.7	1.0	4	01/06/15 13:36	01/28/15 11:40	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%	59-130		4	01/06/15 13:36	01/28/15 11:40	321-60-8	
Terphenyl-d14 (S)	94	%	51-130		4	01/06/15 13:36	01/28/15 11:40	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10222 LUMB **Lab ID: 40108983021** Collected: 12/11/14 12:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.92**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10223 LUMB **Lab ID: 40108983022** Collected: 12/11/14 14:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	12672-29-6	
PCB-1254 (Aroclor 1254)	**23.3J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11097-69-1	
PCB-1260 (Aroclor 1260)	**29.4**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11096-82-5	
PCB, Total	**52.7**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	45-130		1	01/05/15 10:50	01/13/15 11:48	877-09-8	
Decachlorobiphenyl (S)	101	%	55-130		1	01/05/15 10:50	01/13/15 11:48	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.0**	mg/kg	0.087	0.012	1	01/08/15 08:42	01/08/15 18:26	7440-38-2	
Barium	**22.9**	mg/kg	0.087	0.015	1	01/08/15 08:42	01/08/15 18:26	7440-39-3	
Cadmium	**0.042J**	mg/kg	0.087	0.0068	1	01/08/15 08:42	01/08/15 18:26	7440-43-9	
Chromium	**0.28**	mg/kg	0.087	0.038	1	01/08/15 08:42	01/08/15 18:26	7440-47-3	
Copper	**3.4**	mg/kg	0.087	0.025	1	01/08/15 08:42	01/08/15 18:26	7440-50-8	
Lead	**0.32**	mg/kg	0.087	0.0096	1	01/08/15 08:42	01/08/15 18:26	7439-92-1	
Mercury	**0.0086J**	mg/kg	0.017	0.0067	1	01/08/15 08:42	01/08/15 18:26	7439-97-6	
Nickel	**0.22**	mg/kg	0.087	0.026	1	01/08/15 08:42	01/08/15 18:26	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:10	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:10	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:10	83-32-9	
Acenaphthylene	**6.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:10	208-96-8	
Anthracene	**13.1**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:10	120-12-7	
Benzo(a)anthracene	**14.5**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:10	56-55-3	
Benzo(a)pyrene	**57.8**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:10	50-32-8	
Benzo(b)fluoranthene	**14.3**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:10	205-99-2	
Benzo(g,h,i)perylene	**13.7**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:10	191-24-2	
Benzo(k)fluoranthene	**22.9**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:10	207-08-9	
Chrysene	**22.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:10	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:10	53-70-3	
Fluoranthene	**32.4**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:10	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:10	86-73-7	
Indeno(1,2,3-cd)pyrene	**16.7**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:10	193-39-5	B
Naphthalene	**1.1J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:10	91-20-3	
Phenanthrene	**6.9**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:10	85-01-8	
Pyrene	**29.9**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:10	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	94	%	59-130		2	01/06/15 13:36	01/28/15 09:10	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:36	01/28/15 09:10	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10223 LUMB **Lab ID: 40108983022** Collected: 12/11/14 14:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10224 LUMB **Lab ID: 40108983023** Collected: 12/11/14 15:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	12672-29-6	
PCB-1254 (Aroclor 1254)	**18.2J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11097-69-1	
PCB-1260 (Aroclor 1260)	**19.6J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11096-82-5	
PCB, Total	**37.8**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	79	%	45-130		1	01/05/15 10:50	01/13/15 12:05	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 10:50	01/13/15 12:05	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.62**	mg/kg	0.095	0.013	1	01/08/15 08:42	01/09/15 08:38	7440-38-2	
Barium	**18.2**	mg/kg	0.095	0.016	1	01/08/15 08:42	01/09/15 08:38	7440-39-3	
Cadmium	**0.031J**	mg/kg	0.095	0.0075	1	01/08/15 08:42	01/09/15 08:38	7440-43-9	
Chromium	**0.26**	mg/kg	0.095	0.041	1	01/08/15 08:42	01/09/15 08:38	7440-47-3	
Copper	**2.7**	mg/kg	0.095	0.027	1	01/08/15 08:42	01/09/15 08:38	7440-50-8	
Lead	**0.21**	mg/kg	0.095	0.010	1	01/08/15 08:42	01/09/15 08:38	7439-92-1	
Mercury	**<0.0073**	mg/kg	0.019	0.0073	1	01/08/15 08:42	01/09/15 08:38	7439-97-6	
Nickel	**0.19**	mg/kg	0.095	0.029	1	01/08/15 08:42	01/09/15 08:38	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<7.5**	ug/kg	16.7	7.5	10	01/06/15 13:36	01/28/15 11:58	90-12-0	
2-Methylnaphthalene	**<7.1**	ug/kg	16.7	7.1	10	01/06/15 13:36	01/28/15 11:58	91-57-6	
Acenaphthene	**<2.8**	ug/kg	16.7	2.8	10	01/06/15 13:36	01/28/15 11:58	83-32-9	
Acenaphthylene	**<6.0**	ug/kg	16.7	6.0	10	01/06/15 13:36	01/28/15 11:58	208-96-8	
Anthracene	**21.1**	ug/kg	16.7	7.4	10	01/06/15 13:36	01/28/15 11:58	120-12-7	
Benzo(a)anthracene	**59.4**	ug/kg	16.7	3.4	10	01/06/15 13:36	01/28/15 11:58	56-55-3	
Benzo(a)pyrene	**26.8**	ug/kg	16.7	4.7	10	01/06/15 13:36	01/28/15 11:58	50-32-8	
Benzo(b)fluoranthene	**64.8**	ug/kg	16.7	2.9	10	01/06/15 13:36	01/28/15 11:58	205-99-2	
Benzo(g,h,i)perylene	**28.2**	ug/kg	16.7	5.5	10	01/06/15 13:36	01/28/15 11:58	191-24-2	
Benzo(k)fluoranthene	**68.9**	ug/kg	16.7	6.1	10	01/06/15 13:36	01/28/15 11:58	207-08-9	
Chrysene	**100**	ug/kg	16.7	4.2	10	01/06/15 13:36	01/28/15 11:58	218-01-9	
Dibenz(a,h)anthracene	**<4.5**	ug/kg	33.3	4.5	10	01/06/15 13:36	01/28/15 11:58	53-70-3	
Fluoranthene	**158**	ug/kg	16.7	4.3	10	01/06/15 13:36	01/28/15 11:58	206-44-0	
Fluorene	**<9.2**	ug/kg	16.7	9.2	10	01/06/15 13:36	01/28/15 11:58	86-73-7	
Indeno(1,2,3-cd)pyrene	**25.0**	ug/kg	16.7	7.2	10	01/06/15 13:36	01/28/15 11:58	193-39-5	B
Naphthalene	**<3.8**	ug/kg	16.7	3.8	10	01/06/15 13:36	01/28/15 11:58	91-20-3	
Phenanthrene	**17.6**	ug/kg	16.7	2.1	10	01/06/15 13:36	01/28/15 11:58	85-01-8	
Pyrene	**162**	ug/kg	16.7	2.6	10	01/06/15 13:36	01/28/15 11:58	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	84	%	59-130		10	01/06/15 13:36	01/28/15 11:58	321-60-8	
Terphenyl-d14 (S)	85	%	51-130		10	01/06/15 13:36	01/28/15 11:58	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10224 LUMB **Lab ID: 40108983023** Collected: 12/11/14 15:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10225 LUMB **Lab ID: 40108983024** Collected: 12/11/14 16:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	84	%	45-130		1	01/05/15 10:50	01/13/15 12:22	877-09-8	
Decachlorobiphenyl (S)	104	%	55-130		1	01/05/15 10:50	01/13/15 12:22	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.99**	mg/kg	0.096	0.013	1	01/08/15 08:42	01/08/15 18:46	7440-38-2	
Barium	**17.4**	mg/kg	0.096	0.016	1	01/08/15 08:42	01/08/15 18:46	7440-39-3	
Cadmium	**0.029J**	mg/kg	0.096	0.0075	1	01/08/15 08:42	01/08/15 18:46	7440-43-9	
Chromium	**0.19**	mg/kg	0.096	0.042	1	01/08/15 08:42	01/08/15 18:46	7440-47-3	
Copper	**2.6**	mg/kg	0.096	0.028	1	01/08/15 08:42	01/08/15 18:46	7440-50-8	
Lead	**0.20**	mg/kg	0.096	0.011	1	01/08/15 08:42	01/08/15 18:46	7439-92-1	
Mercury	**0.0079J**	mg/kg	0.019	0.0074	1	01/08/15 08:42	01/08/15 18:46	7439-97-6	
Nickel	**0.21**	mg/kg	0.096	0.029	1	01/08/15 08:42	01/08/15 18:46	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<9.4**	ug/kg	20.8	9.4	12.5	01/06/15 13:36	01/28/15 12:15	90-12-0	
2-Methylnaphthalene	**<8.9**	ug/kg	20.8	8.9	12.5	01/06/15 13:36	01/28/15 12:15	91-57-6	
Acenaphthene	**<3.4**	ug/kg	20.8	3.4	12.5	01/06/15 13:36	01/28/15 12:15	83-32-9	
Acenaphthylene	**8.3J**	ug/kg	20.8	7.6	12.5	01/06/15 13:36	01/28/15 12:15	208-96-8	
Anthracene	**28.2**	ug/kg	20.8	9.3	12.5	01/06/15 13:36	01/28/15 12:15	120-12-7	
Benzo(a)anthracene	**69.4**	ug/kg	20.8	4.2	12.5	01/06/15 13:36	01/28/15 12:15	56-55-3	
Benzo(a)pyrene	**25.7**	ug/kg	20.8	5.8	12.5	01/06/15 13:36	01/28/15 12:15	50-32-8	
Benzo(b)fluoranthene	**107**	ug/kg	20.8	3.6	12.5	01/06/15 13:36	01/28/15 12:15	205-99-2	
Benzo(g,h,i)perylene	**25.0**	ug/kg	20.8	6.9	12.5	01/06/15 13:36	01/28/15 12:15	191-24-2	
Benzo(k)fluoranthene	**64.1**	ug/kg	20.8	7.7	12.5	01/06/15 13:36	01/28/15 12:15	207-08-9	
Chrysene	**119**	ug/kg	20.8	5.3	12.5	01/06/15 13:36	01/28/15 12:15	218-01-9	
Dibenz(a,h)anthracene	**5.9J**	ug/kg	41.7	5.6	12.5	01/06/15 13:36	01/28/15 12:15	53-70-3	
Fluoranthene	**198**	ug/kg	20.8	5.4	12.5	01/06/15 13:36	01/28/15 12:15	206-44-0	
Fluorene	**<11.5**	ug/kg	20.8	11.5	12.5	01/06/15 13:36	01/28/15 12:15	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.9J**	ug/kg	20.8	9.0	12.5	01/06/15 13:36	01/28/15 12:15	193-39-5	B
Naphthalene	**<4.8**	ug/kg	20.8	4.8	12.5	01/06/15 13:36	01/28/15 12:15	91-20-3	
Phenanthrene	**15.8J**	ug/kg	20.8	2.6	12.5	01/06/15 13:36	01/28/15 12:15	85-01-8	
Pyrene	**190**	ug/kg	20.8	3.3	12.5	01/06/15 13:36	01/28/15 12:15	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	89	%	59-130		12.5	01/06/15 13:36	01/28/15 12:15	321-60-8	
Terphenyl-d14 (S)	86	%	51-130		12.5	01/06/15 13:36	01/28/15 12:15	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10225 LUMB **Lab ID: 40108983024** Collected: 12/11/14 16:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.6**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.90**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10226 LUMB **Lab ID: 40108983025** Collected: 12/11/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**16.9J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11097-69-1	
PCB-1260 (Aroclor 1260)	**17.5J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11096-82-5	
PCB, Total	**34.4**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	75	%	45-130		1	01/05/15 10:50	01/13/15 12:40	877-09-8	
Decachlorobiphenyl (S)	97	%	55-130		1	01/05/15 10:50	01/13/15 12:40	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.98**	mg/kg	0.093	0.012	1	01/08/15 08:42	01/08/15 18:52	7440-38-2	
Barium	**27.2**	mg/kg	0.093	0.016	1	01/08/15 08:42	01/08/15 18:52	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.093	0.0073	1	01/08/15 08:42	01/08/15 18:52	7440-43-9	
Chromium	**0.27**	mg/kg	0.093	0.040	1	01/08/15 08:42	01/08/15 18:52	7440-47-3	
Copper	**3.1**	mg/kg	0.093	0.027	1	01/08/15 08:42	01/08/15 18:52	7440-50-8	
Lead	**0.40**	mg/kg	0.093	0.010	1	01/08/15 08:42	01/08/15 18:52	7439-92-1	
Mercury	**0.0099J**	mg/kg	0.019	0.0072	1	01/08/15 08:42	01/08/15 18:52	7439-97-6	
Nickel	**0.25**	mg/kg	0.093	0.028	1	01/08/15 08:42	01/08/15 18:52	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**3.1J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:27	90-12-0	
2-Methylnaphthalene	**4.8**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:27	91-57-6	
Acenaphthene	**0.80J**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:27	83-32-9	
Acenaphthylene	**5.1**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:27	208-96-8	
Anthracene	**10.2**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:27	120-12-7	
Benzo(a)anthracene	**15.0**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:27	56-55-3	
Benzo(a)pyrene	**44.1**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:27	50-32-8	
Benzo(b)fluoranthene	**7.8**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:27	205-99-2	
Benzo(g,h,i)perylene	**23.1**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:27	191-24-2	
Benzo(k)fluoranthene	**10.8**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:27	207-08-9	
Chrysene	**12.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:27	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:27	53-70-3	
Fluoranthene	**23.3**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:27	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:27	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.2**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:27	193-39-5	B
Naphthalene	**14.3**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:27	91-20-3	
Phenanthrene	**9.1**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:27	85-01-8	
Pyrene	**23.0**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	59-130		2	01/06/15 13:36	01/28/15 09:27	321-60-8	
Terphenyl-d14 (S)	93	%	51-130		2	01/06/15 13:36	01/28/15 09:27	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10226 LUMB **Lab ID: 40108983025** Collected: 12/11/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.6**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.7**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10254 LUMB **Lab ID: 40108983026** Collected: 12/12/14 09:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 10:50	01/13/15 12:57	877-09-8	
Decachlorobiphenyl (S)	104	%	55-130		1	01/05/15 10:50	01/13/15 12:57	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.26**	mg/kg	0.095	0.013	1	01/08/15 08:42	01/08/15 18:59	7440-38-2	
Barium	**14.8**	mg/kg	0.095	0.016	1	01/08/15 08:42	01/08/15 18:59	7440-39-3	
Cadmium	**0.036J**	mg/kg	0.095	0.0074	1	01/08/15 08:42	01/08/15 18:59	7440-43-9	
Chromium	**0.50**	mg/kg	0.095	0.041	1	01/08/15 08:42	01/08/15 18:59	7440-47-3	
Copper	**3.3**	mg/kg	0.095	0.027	1	01/08/15 08:42	01/08/15 18:59	7440-50-8	
Lead	**0.22**	mg/kg	0.095	0.010	1	01/08/15 08:42	01/08/15 18:59	7439-92-1	
Mercury	**0.0073J**	mg/kg	0.019	0.0073	1	01/08/15 08:42	01/08/15 18:59	7439-97-6	
Nickel	**0.27**	mg/kg	0.095	0.028	1	01/08/15 08:42	01/08/15 18:59	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:44	90-12-0	
2-Methylnaphthalene	**2.5J**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:44	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:44	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:44	208-96-8	
Anthracene	**2.2J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:44	120-12-7	
Benzo(a)anthracene	**9.8**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:44	56-55-3	
Benzo(a)pyrene	**27.8**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:44	50-32-8	
Benzo(b)fluoranthene	**12.3**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:44	205-99-2	
Benzo(g,h,i)perylene	**16.4**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:44	191-24-2	
Benzo(k)fluoranthene	**16.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:44	207-08-9	
Chrysene	**13.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:44	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:44	53-70-3	
Fluoranthene	**16.4**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:44	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:44	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.7**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:44	193-39-5	B
Naphthalene	**2.3J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:44	91-20-3	
Phenanthrene	**7.5**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:44	85-01-8	
Pyrene	**17.3**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:44	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:36	01/28/15 09:44	321-60-8	
Terphenyl-d14 (S)	104	%	51-130		2	01/06/15 13:36	01/28/15 09:44	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10254 LUMB **Lab ID: 40108983026** Collected: 12/12/14 09:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.9**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10256 LUMB **Lab ID: 40108983027** Collected: 12/12/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 10:50	01/13/15 13:14	877-09-8	
Decachlorobiphenyl (S)	107	%	55-130		1	01/05/15 10:50	01/13/15 13:14	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.25**	mg/kg	0.085	0.011	1	01/08/15 08:42	01/08/15 19:05	7440-38-2	
Barium	**15.7**	mg/kg	0.085	0.014	1	01/08/15 08:42	01/08/15 19:05	7440-39-3	
Cadmium	**0.042J**	mg/kg	0.085	0.0066	1	01/08/15 08:42	01/08/15 19:05	7440-43-9	
Chromium	**0.32**	mg/kg	0.085	0.036	1	01/08/15 08:42	01/08/15 19:05	7440-47-3	
Copper	**3.4**	mg/kg	0.085	0.024	1	01/08/15 08:42	01/08/15 19:05	7440-50-8	
Lead	**0.14**	mg/kg	0.085	0.0093	1	01/08/15 08:42	01/08/15 19:05	7439-92-1	
Mercury	**<0.0065**	mg/kg	0.017	0.0065	1	01/08/15 08:42	01/08/15 19:05	7439-97-6	
Nickel	**0.32**	mg/kg	0.085	0.025	1	01/08/15 08:42	01/08/15 19:05	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 10:01	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 10:01	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 10:01	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 10:01	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 10:01	120-12-7	
Benzo(a)anthracene	**0.99J**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 10:01	56-55-3	
Benzo(a)pyrene	**14.0**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 10:01	50-32-8	
Benzo(b)fluoranthene	**0.63J**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 10:01	205-99-2	
Benzo(g,h,i)perylene	**22.9**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 10:01	191-24-2	
Benzo(k)fluoranthene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 10:01	207-08-9	
Chrysene	**1.2J**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 10:01	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 10:01	53-70-3	
Fluoranthene	**2.4J**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 10:01	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 10:01	86-73-7	
Indeno(1,2,3-cd)pyrene	**16.0**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 10:01	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 10:01	91-20-3	
Phenanthrene	**3.0J**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 10:01	85-01-8	
Pyrene	**2.6J**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 10:01	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	59-130		2	01/06/15 13:36	01/28/15 10:01	321-60-8	
Terphenyl-d14 (S)	93	%	51-130		2	01/06/15 13:36	01/28/15 10:01	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10256 LUMB **Lab ID: 40108983027** Collected: 12/12/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.2**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: MPRP/11294 | Analysis Method: EPA 6020
QC Batch Method: EPA 3050B | Analysis Description: 6020 MET TISSUE
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

METHOD BLANK: 1103914 | Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.013	0.10	01/08/15 21:04	
Barium	mg/kg	<0.017	0.10	01/08/15 21:04	
Cadmium	mg/kg	<0.0078	0.10	01/08/15 21:04	
Chromium	mg/kg	<0.043	0.10	01/08/15 21:04	
Copper	mg/kg	<0.029	0.10	01/08/15 21:04	
Lead	mg/kg	<0.011	0.10	01/08/15 21:04	
Mercury	mg/kg	<0.0077	0.020	01/08/15 21:04	
Nickel	mg/kg	<0.030	0.10	01/08/15 21:04	

LABORATORY CONTROL SAMPLE: 1103916

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	20	20.8	104	80-120	
Barium	mg/kg	20	19.8	99	80-120	
Cadmium	mg/kg	20	20.9	104	80-120	
Chromium	mg/kg	20	19.9	100	80-120	
Copper	mg/kg	20	19.7	99	80-120	
Lead	mg/kg	20	20.0	100	80-120	
Mercury	mg/kg	.5	0.48	96	80-120	
Nickel	mg/kg	20	19.5	97	80-120	

LABORATORY CONTROL SAMPLE: 1103917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	59.5	69.6	117	80-120	
Cadmium	mg/kg	42.3	41.7	99	80-120	
Chromium	mg/kg	2	1.5	76	71-120	
Copper	mg/kg	497	412	83	80-120	
Lead	mg/kg	.22	0.21	92	80-120	
Mercury	mg/kg	.29	0.27	93	80-120	
Nickel	mg/kg	5.3	4.6	87	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1103918 1103919

Parameter	Units	40108983001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	0.21	19.9	20	20.8	20.5	103	102	75-125	1	20	
Barium	mg/kg	11.5	19.9	20	31.2	31.3	99	99	75-125	0	20	
Cadmium	mg/kg	0.037J	19.9	20	20.8	20.6	104	103	75-125	1	20	
Chromium	mg/kg	0.061J	19.9	20	20.0	19.9	100	100	75-125	0	20	
Copper	mg/kg	2.0	19.9	20	21.9	21.9	100	100	75-125	0	20	
Lead	mg/kg	0.062J	19.9	20	20.0	20.0	100	100	75-125	0	20	
Mercury	mg/kg	<0.0076	.5	.5	0.50	0.51	99	101	75-125	3	20	
Nickel	mg/kg	0.065J	19.9	20	19.7	19.6	99	98	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: MPRP/11301 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET TISSUE
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1104648 Matrix: Tissue
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.013	0.10	01/08/15 17:08	
Barium	mg/kg	0.034J	0.10	01/08/15 17:08	
Cadmium	mg/kg	<0.0078	0.10	01/08/15 17:08	
Chromium	mg/kg	<0.043	0.10	01/08/15 17:08	
Copper	mg/kg	0.044J	0.10	01/08/15 17:08	
Lead	mg/kg	<0.011	0.10	01/08/15 17:08	
Mercury	mg/kg	<0.0077	0.020	01/08/15 17:08	
Nickel	mg/kg	<0.030	0.10	01/08/15 17:08	

LABORATORY CONTROL SAMPLE: 1104650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	20	21.2	106	80-120	
Barium	mg/kg	20	19.9	99	80-120	
Cadmium	mg/kg	20	21.1	106	80-120	
Chromium	mg/kg	20	20.0	100	80-120	
Copper	mg/kg	20	23.7	118	80-120	
Lead	mg/kg	20	19.8	99	80-120	
Mercury	mg/kg	.5	0.49	98	80-120	
Nickel	mg/kg	20	19.7	98	80-120	

LABORATORY CONTROL SAMPLE: 1104651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	59.5	68.2	115	80-120	
Cadmium	mg/kg	42.3	42.1	99	80-120	
Chromium	mg/kg	2	1.6	82	71-120	
Copper	mg/kg	497	414	83	80-120	
Lead	mg/kg	.22	0.21	93	80-120	
Mercury	mg/kg	.29	0.28	95	80-120	
Nickel	mg/kg	5.3	4.7	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1104652 1104653

Parameter	Units	40108983021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.1	19.9	20	22.2	22.3	106	106	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1104652 1104653

Parameter	Units	40108983021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/kg	20.2	19.9	20	39.9	41.5	99	107	75-125	4	20	
Cadmium	mg/kg	0.047J	19.9	20	21.3	21.2	107	106	75-125	0	20	
Chromium	mg/kg	0.30	19.9	20	20.2	20.8	100	103	75-125	3	20	
Copper	mg/kg	4.4	19.9	20	24.0	24.7	99	102	75-125	3	20	
Lead	mg/kg	0.30	19.9	20	19.9	20.4	99	101	75-125	2	20	
Mercury	mg/kg	0.0084J	.5	.5	0.51	0.52	102	103	75-125	2	20	
Nickel	mg/kg	0.27	19.9	20	20.0	20.5	99	102	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25575 Analysis Method: EPA 8082A
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

METHOD BLANK: 1103368 Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1221 (Aroclor 1221)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1232 (Aroclor 1232)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1242 (Aroclor 1242)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1248 (Aroclor 1248)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1254 (Aroclor 1254)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1260 (Aroclor 1260)	ug/kg	<12.5	25.0	01/21/15 13:29	
Decachlorobiphenyl (S)	%	84	55-130	01/21/15 13:29	
Tetrachloro-m-xylene (S)	%	84	45-130	01/21/15 13:29	

LABORATORY CONTROL SAMPLE & LCSD: 1103369 1103386

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<12.5	<12.5					20	
PCB-1221 (Aroclor 1221)	ug/kg		<12.5	<12.5					20	
PCB-1232 (Aroclor 1232)	ug/kg		<12.5	<12.5					20	
PCB-1242 (Aroclor 1242)	ug/kg		<12.5	<12.5					20	
PCB-1248 (Aroclor 1248)	ug/kg		<12.5	<12.5					20	
PCB-1254 (Aroclor 1254)	ug/kg	250	218	207	87	83	56-130	5	20	
PCB-1260 (Aroclor 1260)	ug/kg		<12.5	<12.5					20	
Decachlorobiphenyl (S)	%				95	84	55-130			
Tetrachloro-m-xylene (S)	%				91	85	45-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25576 Analysis Method: EPA 8082A
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1103372 Matrix: Tissue
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1221 (Aroclor 1221)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1232 (Aroclor 1232)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1242 (Aroclor 1242)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1248 (Aroclor 1248)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1254 (Aroclor 1254)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1260 (Aroclor 1260)	ug/kg	<12.5	25.0	01/13/15 10:38	
Decachlorobiphenyl (S)	%	84	55-130	01/13/15 10:38	
Tetrachloro-m-xylene (S)	%	75	45-130	01/13/15 10:38	

LABORATORY CONTROL SAMPLE & LCSD: 1103373 1103387

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<12.5	<12.5					20	
PCB-1221 (Aroclor 1221)	ug/kg		<12.5	<12.5					20	
PCB-1232 (Aroclor 1232)	ug/kg		<12.5	<12.5					20	
PCB-1242 (Aroclor 1242)	ug/kg		<12.5	<12.5					20	
PCB-1248 (Aroclor 1248)	ug/kg		<12.5	<12.5					20	
PCB-1254 (Aroclor 1254)	ug/kg	250	163	182	65	73	56-130	11	20	
PCB-1260 (Aroclor 1260)	ug/kg		<12.5	<12.5					20	
Decachlorobiphenyl (S)	%				83	90	55-130			
Tetrachloro-m-xylene (S)	%				71	75	45-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25577 — Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3540 — Analysis Description: 8270 Tissue PAH by SIM MSSV
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

METHOD BLANK: 1103376 — Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<1.5	3.3	01/19/15 14:02	
2-Methylnaphthalene	ug/kg	<1.4	3.3	01/19/15 14:02	
Acenaphthene	ug/kg	<0.55	3.3	01/19/15 14:02	
Acenaphthylene	ug/kg	<1.2	3.3	01/19/15 14:02	
Anthracene	ug/kg	<1.5	3.3	01/19/15 14:02	
Benzo(a)anthracene	ug/kg	<0.68	3.3	01/19/15 14:02	
Benzo(a)pyrene	ug/kg	<0.93	3.3	01/19/15 14:02	
Benzo(b)fluoranthene	ug/kg	<0.58	3.3	01/19/15 14:02	
Benzo(g,h,i)perylene	ug/kg	<1.1	3.3	01/19/15 14:02	
Benzo(k)fluoranthene	ug/kg	<1.2	3.3	01/19/15 14:02	
Chrysene	ug/kg	<0.84	3.3	01/19/15 14:02	
Dibenz(a,h)anthracene	ug/kg	<0.90	6.7	01/19/15 14:02	
Fluoranthene	ug/kg	<0.87	3.3	01/19/15 14:02	
Fluorene	ug/kg	<1.8	3.3	01/19/15 14:02	
Indeno(1,2,3-cd)pyrene	ug/kg	4.9	3.3	01/19/15 14:02	
Naphthalene	ug/kg	<0.76	3.3	01/19/15 14:02	
Phenanthrene	ug/kg	<0.42	3.3	01/19/15 14:02	
Pyrene	ug/kg	<0.52	3.3	01/19/15 14:02	
2-Fluorobiphenyl (S)	%	91	59-130	01/19/15 14:02	
Terphenyl-d14 (S)	%	92	51-130	01/19/15 14:02	

LABORATORY CONTROL SAMPLE & LCSD: 1103377 — 1103384

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	22.4	23.3	67	70	50-140	4	40	
2-Methylnaphthalene	ug/kg	33.3	25.2	26.1	76	78	50-140	3	40	
Acenaphthene	ug/kg	33.3	25.2	26.8	76	80	55-130	6	40	
Acenaphthylene	ug/kg	33.3	24.9	25.7	75	77	48-130	3	40	
Anthracene	ug/kg	33.3	24.6	23.6	74	71	41-130	4	40	
Benzo(a)anthracene	ug/kg	33.3	28.4	27.0	85	81	50-130	5	40	
Benzo(a)pyrene	ug/kg	33.3	24.2	23.0	72	69	50-130	5	40	
Benzo(b)fluoranthene	ug/kg	33.3	19.9	18.9	60	57	50-130	5	40	
Benzo(g,h,i)perylene	ug/kg	33.3	23.2	22.9	70	69	20-130	1	40	
Benzo(k)fluoranthene	ug/kg	33.3	27.7	27.8	83	83	50-130	0	40	
Chrysene	ug/kg	33.3	23.8	23.7	71	71	55-130	1	40	
Dibenz(a,h)anthracene	ug/kg	33.3	21.5	22.6	64	68	33-130	5	40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

LABORATORY CONTROL SAMPLE & LCSD: 1103377 1103384

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Fluoranthene	ug/kg	33.3	26.7	26.7	80	80	51-130	0	40	
Fluorene	ug/kg	33.3	27.2	28.6	82	86	55-130	5	40	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	23.6	22.2	71	66	33-130	6	40	
Naphthalene	ug/kg	33.3	21.0	21.5	63	65	47-130	2	40	
Phenanthrene	ug/kg	33.3	27.9	28.1	84	84	49-130	0	40	
Pyrene	ug/kg	33.3	30.7	30.0	92	90	46-130	2	40	
2-Fluorobiphenyl (S)	%				92	96	59-130			
Terphenyl-d14 (S)	%				88	85	51-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25578 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3540 | Analysis Description: 8270 Tissue PAH by SIM MSSV
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1103380 | Matrix: Tissue
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<1.5	3.3	01/19/15 14:54	
2-Methylnaphthalene	ug/kg	<1.4	3.3	01/19/15 14:54	
Acenaphthene	ug/kg	<0.55	3.3	01/19/15 14:54	
Acenaphthylene	ug/kg	<1.2	3.3	01/19/15 14:54	
Anthracene	ug/kg	<1.5	3.3	01/19/15 14:54	
Benzo(a)anthracene	ug/kg	<0.68	3.3	01/19/15 14:54	
Benzo(a)pyrene	ug/kg	<0.93	3.3	01/19/15 14:54	
Benzo(b)fluoranthene	ug/kg	<0.58	3.3	01/19/15 14:54	
Benzo(g,h,i)perylene	ug/kg	<1.1	3.3	01/19/15 14:54	
Benzo(k)fluoranthene	ug/kg	<1.2	3.3	01/19/15 14:54	
Chrysene	ug/kg	<0.84	3.3	01/19/15 14:54	
Dibenz(a,h)anthracene	ug/kg	<0.90	6.7	01/19/15 14:54	
Fluoranthene	ug/kg	<0.87	3.3	01/19/15 14:54	
Fluorene	ug/kg	<1.8	3.3	01/19/15 14:54	
Indeno(1,2,3-cd)pyrene	ug/kg	3.1J	3.3	01/19/15 14:54	
Naphthalene	ug/kg	<0.76	3.3	01/19/15 14:54	
Phenanthrene	ug/kg	<0.42	3.3	01/19/15 14:54	
Pyrene	ug/kg	<0.52	3.3	01/19/15 14:54	
2-Fluorobiphenyl (S)	%	79	59-130	01/19/15 14:54	
Terphenyl-d14 (S)	%	85	51-130	01/19/15 14:54	

LABORATORY CONTROL SAMPLE & LCSD: 1103381 1103385

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	18.2	21.6	54	65	50-140	17	40	
2-Methylnaphthalene	ug/kg	33.3	25.7	24.3	77	73	50-140	5	40	
Acenaphthene	ug/kg	33.3	25.1	23.1	75	69	55-130	8	40	
Acenaphthylene	ug/kg	33.3	25.1	23.2	75	70	48-130	8	40	
Anthracene	ug/kg	33.3	24.1	23.5	72	71	41-130	2	40	
Benzo(a)anthracene	ug/kg	33.3	32.0	27.4	96	82	50-130	15	40	
Benzo(a)pyrene	ug/kg	33.3	26.8	22.9	81	69	50-130	16	40	
Benzo(b)fluoranthene	ug/kg	33.3	26.4	19.8	79	60	50-130	28	40	
Benzo(g,h,i)perylene	ug/kg	33.3	25.4	22.0	76	66	20-130	14	40	
Benzo(k)fluoranthene	ug/kg	33.3	29.3	27.1	88	81	50-130	8	40	
Chrysene	ug/kg	33.3	24.7	22.4	74	67	55-130	10	40	
Dibenz(a,h)anthracene	ug/kg	33.3	24.6	23.3	74	70	33-130	5	40	
Fluoranthene	ug/kg	33.3	28.5	25.4	86	76	51-130	11	40	
Fluorene	ug/kg	33.3	27.1	24.6	81	74	55-130	10	40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

LABORATORY CONTROL SAMPLE & LCSD: 1103381 1103385

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	26.5	26.4	79	79	33-130	0	40	
Naphthalene	ug/kg	33.3	20.9	20.7	63	62	47-130	1	40	
Phenanthrene	ug/kg	33.3	29.3	26.5	88	79	49-130	10	40	
Pyrene	ug/kg	33.3	32.0	28.5	96	85	46-130	12	40	
2-Fluorobiphenyl (S)	%				93	84	59-130			
Terphenyl-d14 (S)	%				88	82	51-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25582 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight Reporting Only
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014

SAMPLE DUPLICATE: 1103440

Parameter	Units	40108983001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	89.0	88.9	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25584 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight Reporting Only
Associated Lab Samples: 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

SAMPLE DUPLICATE: 1103455

Parameter	Units	40108983015 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	90.5	90.5	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25590 Analysis Method: Pace Lipid
QC Batch Method: Pace Lipid Analysis Description: LIPID
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

METHOD BLANK: 1104133 Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lipid	%	0.90		01/08/15 10:39	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25591 Analysis Method: Pace Lipid
QC Batch Method: Pace Lipid Analysis Description: LIPID
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1104134 Matrix: Tissue
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lipid	%	0.82		01/08/15 10:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

BATCH QUALIFIERS

Batch: OEXT/25590

[1] A lipid duplicate was not performed for this batch due to insufficient sample volume.

Batch: OEXT/25591

[1] A lipid duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSSV/7553

[IP] Benzo(b)fluoranthene and benzo(k)fluoranthene were in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

[1] One compound above RDL in extraction blank; compound flagged in samples. Only projects that have been OK'd by clients are being reported.

Batch: GCSV/12459

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSSV/7559

[IP] Benzo(b)fluoranthene and benzo(k)fluoranthene were in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: GCSV/12486

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983001	**BKGD 100814 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983002	**CONTROL 100814 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983003	**10207 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983004	**10208 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983005	**10209 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983006	**10210 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983007	**10212 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983008	**10213 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983009	**10214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983010	**BKGD 102214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983011	**CONTROL 102214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983012	**10215 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983013	**10216 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983014	**10217 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983015	**10218 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983016	**10219 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983017	**10220 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983018	**10221 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983019	**BKGD 111214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983020	**CONTROL 111214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983021	**10222 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983022	**10223 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983023	**10224 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983024	**10225 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983025	**10226 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983026	**10254 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983027	**10256 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983001	**BKGD 100814 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983002	**CONTROL 100814 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983003	**10207 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983004	**10208 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983005	**10209 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983006	**10210 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983007	**10212 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983008	**10213 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983009	**10214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983010	**BKGD 102214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983011	**CONTROL 102214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983012	**10215 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983013	**10216 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983014	**10217 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983015	**10218 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983016	**10219 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983017	**10220 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983018	**10221 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983019	**BKGD 111214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983020	**CONTROL 111214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983021	**10222 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983022	**10223 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983023	**10224 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983024	**10225 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983025	**10226 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983026	**10254 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983027	**10256 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983001	**BKGD 100814 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983002	**CONTROL 100814 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983003	**10207 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983004	**10208 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983005	**10209 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983006	**10210 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983007	**10212 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983008	**10213 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983009	**10214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983010	**BKGD 102214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983011	**CONTROL 102214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983012	**10215 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983013	**10216 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983014	**10217 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983015	**10218 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983016	**10219 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983017	**10220 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983018	**10221 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983019	**BKGD 111214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983020	**CONTROL 111214 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983021	**10222 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983022	**10223 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983023	**10224 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983024	**10225 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983025	**10226 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983026	**10254 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983027	**10256 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983001	**BKGD 100814 LUMB**	ASTM D2974-87	OEXT/25582		
40108983002	**CONTROL 100814 LUMB**	ASTM D2974-87	OEXT/25582		
40108983003	**10207 LUMB**	ASTM D2974-87	OEXT/25582		
40108983004	**10208 LUMB**	ASTM D2974-87	OEXT/25582		
40108983005	**10209 LUMB**	ASTM D2974-87	OEXT/25582		
40108983006	**10210 LUMB**	ASTM D2974-87	OEXT/25582		
40108983007	**10212 LUMB**	ASTM D2974-87	OEXT/25582		
40108983008	**10213 LUMB**	ASTM D2974-87	OEXT/25582		
40108983009	**10214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983010	**BKGD 102214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983011	**CONTROL 102214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983012	**10215 LUMB**	ASTM D2974-87	OEXT/25582		
40108983013	**10216 LUMB**	ASTM D2974-87	OEXT/25582		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983014	**10217 LUMB**	ASTM D2974-87	OEXT/25582		
40108983015	**10218 LUMB**	ASTM D2974-87	OEXT/25584		
40108983016	**10219 LUMB**	ASTM D2974-87	OEXT/25584		
40108983017	**10220 LUMB**	ASTM D2974-87	OEXT/25584		
40108983018	**10221 LUMB**	ASTM D2974-87	OEXT/25584		
40108983019	**BKGD 111214 LUMB**	ASTM D2974-87	OEXT/25584		
40108983020	**CONTROL 111214 LUMB**	ASTM D2974-87	OEXT/25584		
40108983021	**10222 LUMB**	ASTM D2974-87	OEXT/25584		
40108983022	**10223 LUMB**	ASTM D2974-87	OEXT/25584		
40108983023	**10224 LUMB**	ASTM D2974-87	OEXT/25584		
40108983024	**10225 LUMB**	ASTM D2974-87	OEXT/25584		
40108983025	**10226 LUMB**	ASTM D2974-87	OEXT/25584		
40108983026	**10254 LUMB**	ASTM D2974-87	OEXT/25584		
40108983027	**10256 LUMB**	ASTM D2974-87	OEXT/25584		
40108983001	**BKGD 100814 LUMB**	Pace Lipid	OEXT/25590		
40108983002	**CONTROL 100814 LUMB**	Pace Lipid	OEXT/25590		
40108983003	**10207 LUMB**	Pace Lipid	OEXT/25590		
40108983004	**10208 LUMB**	Pace Lipid	OEXT/25590		
40108983005	**10209 LUMB**	Pace Lipid	OEXT/25590		
40108983006	**10210 LUMB**	Pace Lipid	OEXT/25590		
40108983007	**10212 LUMB**	Pace Lipid	OEXT/25590		
40108983008	**10213 LUMB**	Pace Lipid	OEXT/25590		
40108983009	**10214 LUMB**	Pace Lipid	OEXT/25590		
40108983010	**BKGD 102214 LUMB**	Pace Lipid	OEXT/25590		
40108983011	**CONTROL 102214 LUMB**	Pace Lipid	OEXT/25590		
40108983012	**10215 LUMB**	Pace Lipid	OEXT/25590		
40108983013	**10216 LUMB**	Pace Lipid	OEXT/25590		
40108983014	**10217 LUMB**	Pace Lipid	OEXT/25590		
40108983015	**10218 LUMB**	Pace Lipid	OEXT/25590		
40108983016	**10219 LUMB**	Pace Lipid	OEXT/25590		
40108983017	**10220 LUMB**	Pace Lipid	OEXT/25590		
40108983018	**10221 LUMB**	Pace Lipid	OEXT/25590		
40108983019	**BKGD 111214 LUMB**	Pace Lipid	OEXT/25590		
40108983020	**CONTROL 111214 LUMB**	Pace Lipid	OEXT/25591		
40108983021	**10222 LUMB**	Pace Lipid	OEXT/25591		
40108983022	**10223 LUMB**	Pace Lipid	OEXT/25591		
40108983023	**10224 LUMB**	Pace Lipid	OEXT/25591		
40108983024	**10225 LUMB**	Pace Lipid	OEXT/25591		
40108983025	**10226 LUMB**	Pace Lipid	OEXT/25591		
40108983026	**10254 LUMB**	Pace Lipid	OEXT/25591		
40108983027	**10256 LUMB**	Pace Lipid	OEXT/25591		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

RS

40108983

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	M. Garton
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City, MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SL = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) — Y/N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested: PAHs EPA Method 8270D-SIM; PCBs EPA-8082; Metals As, Ba, Cd, Cr, Pb, Hg, copper Nickel; Fee Mur 12/29/14; Moisture; Dioxins EPA 8290

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (Mur 12/23/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	BKGD 100814 Lumb	10/8/14	1600	Tissue	~~Lab control~~ Background Worms (Mu-12/23/14)	1-4oz ag A	
002	Control 100814 Lumb	11/5-6/14	730-950		~~BKGD Worms~~ Lab Control	1-8oz ag A	
003	10207 Lumb	11/5-6/14	9-1230		SS-1022-AT		
004	10208 Lumb	11/5-6/14	1045-1425		SS 1024-AT		
005	10209 Lumb	11/5-6/14	1500-1519		SS-1032-AT		
006	10210 Lumb	11/5-7/14	921-1821		SS-1021-AT		
007	10212 Lumb	11/5-7/14	834-1835		SS-1026-AT		
008	10213 Lumb	11/6-7/14	1100-1356		SS-1028-AT		
009	10214 Lumb	11/6-7/14	1315-1418		SS-1025-AT		
010	BKGD 102214 Lumb	10/22/14	1530		Background Worms	C 1-4oz ag A	
011	Control 102214 Lumb	11/19-20/14	0745-0833		Control Lab.		
012	10215 Lumb	11/19-20/14	945-1035		SS-1010-AT		
013	10216 Lumb	11/19-20/14	1100-1010	Tissue	SS-1029-AT		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mike W Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[signature]	12/30/14 1030

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

UPPER MIDWEST REGION
MN: 612-607-1700 **WI:** 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Marlee Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
Sl = Sludge	WP = Wipe

FILTERED? (YES/NO) — Y/N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested: EPA PAHs 8270D-SIM; EPA 8082 PCBs; As, Ba, Cd, Cr, Pb, Hg Metals copper, Nickel; TOC (new 12/29/14); Moisture; Dioxins EPA 8290

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (new 12/29/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
014	10217 Lumb	11/19-20/14	1315-1610	Tissue	SS-1001-AT	1-8ozag A	
015	10218 Lumb	11/19-20/14	1445-1630		SS-1042-AT		
016	10219 Lumb	11/19-21/14	1048-1720		SS 1009-AT		
017	10220 Lumb	11/20-21/14	922-1030		SS 1017-AT		
018	10221 Lumb	11/20-21/14	1300-1340		SS 1011-AT		
019	BKGD 11/12/14 Lumb	11/12/14	1535		Background wells	C 1-4ozag A	
020	Control 11/12/14 Lumb	12/10-11/14	845-1200		Lab Control		
021	10222 Lumb	12/10-11/14	1030-1205		SS 1031-AT		
022	10223 Lumb	12/10-11/14	1231-1400		SS 1033-AT		
023	10224 Lumb	12/10-11/14	1300-1540		SS 1034-AT		
024	10225 Lumb	12/10-11/14	1500-1605		SS 1002-AT		
025	10226 Lumb	12/10-11/14	1630-1630		SS 1005-AT		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Marlee Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[signature]	12/30/14 1030

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290.00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Mark Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEC
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
Sl = Sludge	WP = Wipe

FILTERED? (YES/NO) — Y / N
PRESERVATION (CODE)* — Pick Letter

PACE LAB #	LAB ~~CLIENT FIELD~~ ID	COLLECTION DATE	COLLECTION TIME	MATRIX	PAHs EPA 8270D-Sim	PCBs EPA 8082	Metals As, Ba, Cd, Copper Cr, Pb, Hg, Nickel	TOC Mark 12/28/14	Moisture	Dioxins EPA 8290D	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
026	10254 Lumb	12/10-12/14	1518-900	Tissue	↓	↓	↓	↓	↓	↓	SS 1041-AT	1-8oz agA	
027	10256 Lumb	12/11-12/14	1030-1230	Tissue							SS 1012-AT	↓	

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mark Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[illegible]	12/30/14 1030

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present
Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

40108983

Metals to be analyzed - arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc using EPA Method 6010/7474. These are not the RCRA metals. At our request **PACE quoted Metals by ICP-MS - (As, Ba, Cd, Cr, Pb, Hg, Se, Ag) (soil/solid). We will need to add copper and nickel to the list and do not need Se and Ag.**

PCB using EPA Method 8082; **PACE quoted Method 8082 also. OK**

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270**

17 Dioxin isomers – I see that you indicated analyzing using EPA method 1613B. We are using EPA Method 8290 for the soil/sediment analysis.

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270.** 8270 SIM has lower detection limits, and is essentially a second 8270 run. If this is needed, the price does increase slightly. Generally 8270D-SIM is NOT run unless these limits are needed.

For the Dioxin in Tissue, we can analyze by 8290 instead of 1613B, there will not be difference in price.

Please use the listed Methods for analysis

Sample Condition Upon Receipt

Pace Analytical

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40108983

40108983

Client Name: Great Lakes Env.

Courier: ☒ Fed Ex ☐ UPS ☐ Client ☐ Pace Other:

Tracking #: 9802 5316 3260

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR-47 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0 /Corr: 0 **Biological Tissue is Frozen:** ☒ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Person examining contents:
Date: 12/30/14
Initials: RS

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: Bio		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐Yes ☐No ☒N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐Yes ☐No ☒N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes ☒No	Initial when completed / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	14.
Trip Blank Present:	☐Yes ☐No ☒N/A	15.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____
If checked, see attached form for additional comments ☐
Comments/ Resolution: _____

Project Manager Review: Amt for TN **Date:** 12/30/14

F-GB-C-031-Rev.02 (28Oct2013) SCUR Form

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Tod Noltemeyer
PASI Wisconsin
1241 Bellevue Street
Suite 9
Green Bay WI 54302

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10293397
Sample Receipt Date: 01/07/2015
Client Project #: 40108983
Client Sub PO #: N/A
State Cert #: 9909

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

January 21, 2015

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
January 21, 2015

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on twenty-seven samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The first nineteen samples listed on the chain-of-custody documentation were received outside of the 30-day hold time recommended in the method. All twenty-seven samples were extracted outside the 30-day hold time, therefore, the reported values should be regarded as minimum possible concentrations.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 36-106%. Except for three low values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean oil

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 92-130% with relative percent differences of 0.0-6.1%. These results were all within the target ranges for the method. Matrix spikes were not prepared with the sample batches.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q
Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

RUSH
JP 1/7/15

Chain of Custody

Pace Analytical®
www.pacelabs.com
10293397

Workorder: 40108983 **Workorder Name:** 2290-00 STANTEC **Owner Received Date:** 12/30/2014 **Results Requested By:** 1/21/2015

Report To

Tod Noltemeyer
Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone (920)469-2436
Fax (920)469-8827

Subcontract To

Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved Plastic	Dioxin/Furans by 8290	LAB USE ONLY
1	BKGD 100814 LUMB	PS	10/8/2014 16:00	40108983001	Tissue	1	X	001
2	CONTROL 100814 LUMB	PS	11/6/2014 09:50	40108983002	Tissue	1		002
3	10207 LUMB	PS	11/6/2014 12:30	40108983003	Tissue	1		003
4	10208 LUMB	PS	11/6/2014 14:25	40108983004	Tissue	1		004
5	10209 LUMB	PS	11/6/2014 15:19	40108983005	Tissue	1		005
6	10210 LUMB	PS	11/7/2014 18:21	40108983006	Tissue	1		006
7	10212 LUMB	PS	11/7/2014 18:35	40108983007	Tissue	1		007
8	10213 LUMB	PS	11/7/2014 13:56	40108983008	Tissue	1		008
9	10214 LUMB	PS	11/7/2014 14:18	40108983009	Tissue	1		009
10	BKGD 102214 LUMB	PS	10/22/2014 15:30	40108983010	Tissue	1		010
11	CONTROL 102214 LUMB	PS	11/20/2014 08:33	40108983011	Tissue	1		011
12	10215 LUMB	PS	11/20/2014 10:35	40108983012	Tissue	1		012
13	10216 LUMB	PS	11/20/2014 16:10	40108983013	Tissue	1		013
14	10217 LUMB	PS	11/20/2014 16:10	40108983014	Tissue	1		014
15	10218 LUMB	PS	11/20/2014 16:30	40108983015	Tissue	1		015
16	10219 LUMB	PS	11/21/2014 17:20	40108983016	Tissue	1		016
17	10220 LUMB	PS	11/21/2014 10:20	40108983017	Tissue	1		017
18	10221 LUMB	PS	11/21/2014 13:40	40108983018	Tissue	1		018
19	BKGD 111214 LUMB	PS	11/12/2014 15:35	40108983019	Tissue	1		019

Chain of Custody

Pace Analytical®
www.pacelabs.com
10293397

Workorder: 40108983 **Workorder Name:** 2290-00 STANTEC **Owner Received Date:** 12/30/2014 **Results Requested By:** 1/21/2015

Report To

Tod Noltemeyer
Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone (920)469-2436
Fax (920)469-8827

Subcontract To

Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Preserved Containers: Methanol	Requested Analysis: Dioxin/Furans by 8290	LAB USE ONLY
20	CONTROL 111214 LUMB	PS	12/11/2014 12:00	40108983020	Tissue	1		X	020
21	10222 LUMB	PS	12/11/2014 12:05	40108983021	Tissue	1			021
22	10223 LUMB	PS	12/11/2014 14:00	40108983022	Tissue	1			022
23	10224 LUMB	PS	12/11/2014 15:40	40108983023	Tissue	1			023
24	10225 LUMB	PS	12/11/2014 16:05	40108983024	Tissue	1			024
25	10226 LUMB	PS	12/11/2014 16:30	40108983025	Tissue	1			025
26	10254 LUMB	PS	12/12/2014 09:00	40108983026	Tissue	1			026
27	10256 LUMB	PS	12/12/2014 12:30	40108983027	Tissue	1			027

Transfers	Released By	Date/Time	Received By	Date/Time
1	Sarah Weyers PaceGB	1/6/15 1430	[illegible] PACE	1/7/15 10:19
2				
3				

Comments

Cooler Temperature on Receipt Dry Ice °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE WI

Project #: WO#: 10293397

10293397

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☒ Other: Waltco

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet Dry Ice ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): Dry Ice **Cooler Temp Corrected (°C):** Dry Ice **Biological Tissue Frozen?** ☒ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C **Correction Factor:** Dry Ice **Date and Initials of Person Examining Contents:** JP 1/7/15

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: TS	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 1/7/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 100814 LUMB			
Lab Sample ID	40108983001			
Filename	F150113B_06			
Injected By	CVS			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	10/08/2014	16:00
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	17:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.120	-----	0.080	J	2,3,7,8-TCDF-13C	2.00	71
Total TCDF	0.270	-----	0.080	J	2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	ND	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	89
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	0.051		1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	ND	-----	0.043		2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	-----	0.047		1,2,3,7,8,9-HxCDF-13C	2.00	68
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	-----	0.062		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.062		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	0.041		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	0.036		OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	-----	0.038				
1,2,3,7,8,9-HxCDF	ND	-----	0.044		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.040		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.046		2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	0.049				
1,2,3,7,8,9-HxCDD	ND	-----	0.043				
Total HxCDD	0.048	-----	0.046	J			
1,2,3,4,6,7,8-HpCDF	0.042	-----	0.028	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.039		Equivalence: 0.12 ng/Kg		
Total HpCDF	0.084	-----	0.033	BJ	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.071	0.047	IJ			
Total HpCDD	0.120	-----	0.047	J			
OCDF	ND	-----	0.130				
OCDD	0.320	-----	0.120	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 100814 LUMB		
Lab Sample ID	40108983002		
Filename	F150113B_07		
Injected By	CVS		
Total Amount Extracted	20.2 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/06/2014 09:50
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015 20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015 18:12

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.200	-----	0.130	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	2.100	-----	0.130		2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	89
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	0.250	-----	0.150	J	1,2,3,7,8-PeCDD-13C	2.00	102
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.078		1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	-----	0.058	0.054	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	ND	-----	0.066		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.071		1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	0.091	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	0.055		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.057		OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	-----	0.062	0.052	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.063		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.057		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.082	-----	0.069	J	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	0.086	-----	0.074	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.063				
Total HxCDD	0.260	-----	0.068	J			
1,2,3,4,6,7,8-HpCDF	-----	0.063	0.047	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.074		Equivalence: 0.18 ng/Kg		
Total HpCDF	0.074	-----	0.060	BJ	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.150	0.073	IJ			
Total HpCDD	0.260	-----	0.073	J			
OCDF	ND	-----	0.140				
OCDD	0.430	-----	0.130	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10207 LUMB			
Lab Sample ID	40108983003			
Filename	F150113B_08			
Injected By	CVS			
Total Amount Extracted	20.4 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	12:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	18:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.220		2,3,7,8-TCDF-13C	2.00	58
Total TCDF	0.25	-----	0.220	J	2,3,7,8-TCDD-13C	2.00	69
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.200		2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	ND	-----	0.200		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	52
1,2,3,7,8-PeCDF	ND	-----	0.180		1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	-----	0.092		2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	1.20	-----	0.140	J	1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	54
1,2,3,7,8-PeCDD	ND	-----	0.110		1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	0.25	-----	0.110	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	51
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	0.076		1,2,3,4,6,7,8-HpCDD-13C	2.00	57
1,2,3,6,7,8-HxCDF	-----	0.13	0.090	IJ	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	0.094				
1,2,3,7,8,9-HxCDF	ND	-----	0.096		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.40	-----	0.089	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.130		2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	-----	0.24	0.150	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	1.70	-----	0.130	J			
1,2,3,4,6,7,8-HpCDF	3.10	-----	0.098		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 0.32 ng/Kg		
Total HpCDF	6.10	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.10	-----	0.180				
Total HpCDD	9.00	-----	0.180				
OCDF	1.80	-----	0.390	BJ			
OCDD	34.00	-----	0.270				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10208 LUMB			
Lab Sample ID	40108983004			
Filename	F150113B_09			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	14:25
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	19:36

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.53	-----	0.170		2,3,7,8-TCDF-13C	2.00	54
Total TCDF	4.10	-----	0.170		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	0.26	-----	0.200	J	2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	2.10	-----	0.200		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	0.27	-----	0.170	J	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	0.38	-----	0.110	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	6.90	-----	0.140		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	51
1,2,3,7,8-PeCDD	-----	0.24	0.130	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	48
Total PeCDD	1.40	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	0.39	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	-----	0.32	0.086	IJ	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	0.25	-----	0.140	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.100		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	11.00	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.15	0.091	IJ	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,6,7,8-HxCDD	-----	0.92	0.066	IJ			
1,2,3,7,8,9-HxCDD	0.28	-----	0.078	J			
Total HxCDD	4.20	-----	0.078				
1,2,3,4,6,7,8-HpCDF	7.70	-----	0.074		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.120		Equivalence: 1.0 ng/Kg		
Total HpCDF	14.00	-----	0.099		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.079				
Total HpCDD	6.30	-----	0.079				
OCDF	1.90	-----	0.250	BJ			
OCDD	17.00	-----	0.160				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10209 LUMB			
Lab Sample ID	40108983005-R			
Filename	F150120B_08			
Injected By	SMT			
Total Amount Extracted	5.20 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	15:19
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	21:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.85	-----	0.32	J	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	4.90	-----	0.32		2,3,7,8-TCDD-13C	2.00	91
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.33		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.33		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	-----	0.20		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	-----	0.42	0.13	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	4.40	-----	0.17	J	1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	0.31	-----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	1.10	-----	0.19	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	0.28	-----	0.19	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	-----	0.40	0.16	IJ	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	0.21	-----	0.15	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.16		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	4.00	-----	0.16	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.36		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	-----	0.59	0.38	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.29				
Total HxCDD	2.20	-----	0.34	J			
1,2,3,4,6,7,8-HpCDF	4.30	-----	0.20	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.25		Equivalence: 0.98 ng/Kg		
Total HpCDF	8.20	-----	0.23	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.00	-----	0.24	J			
Total HpCDD	14.00	-----	0.24				
OCDF	2.30	-----	0.48	J			
OCDD	33.00	-----	0.63				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10210 LUMB			
Lab Sample ID	40108983006			
Filename	F150113B_11			
Injected By	CVS			
Total Amount Extracted	20.2 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	18:21
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	21:00

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.190		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	0.58	-----	0.190		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.160		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.160		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	-----	0.11	0.088	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	0.45	-----	0.096	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	-----	0.12	0.097	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	0.14	-----	0.097	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	-----	0.11	0.074	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	0.12	-----	0.068	J	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	0.065				
1,2,3,7,8,9-HxCDF	ND	-----	0.091		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.80	-----	0.074		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.099		2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.41	-----	0.100	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	1.40	-----	0.110	J			
1,2,3,4,6,7,8-HpCDF	3.10	-----	0.089		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.40 ng/Kg		
Total HpCDF	6.00	-----	0.096		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.10	-----	0.093				
Total HpCDD	11.00	-----	0.093				
OCDF	1.40	-----	0.300	BJ			
OCDD	27.00	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10212 LUMB			
Lab Sample ID	40108983007			
Filename	F150113B_12			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	18:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	21:42

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.250		2,3,7,8-TCDF-13C	2.00	55
Total TCDF	0.64	-----	0.250		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	0.210		2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	ND	-----	0.210		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	ND	-----	0.088		2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	1.40	-----	0.110	J	1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	50
1,2,3,7,8-PeCDD	ND	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.28	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	48
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	0.12	-----	0.082	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	53
1,2,3,6,7,8-HxCDF	ND	-----	0.087		OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	-----	0.071	0.065	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.086		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.40	-----	0.080	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.150	0.120	IJ	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	0.41	-----	0.150	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.110				
Total HxCDD	4.90	-----	0.120				
1,2,3,4,6,7,8-HpCDF	1.60	-----	0.160	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.220		Equivalence: 0.40 ng/Kg		
Total HpCDF	4.30	-----	0.190		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	8.10	-----	0.082				
Total HpCDD	41.00	-----	0.082				
OCDF	2.60	-----	0.210	J			
OCDD	77.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10213 LUMB			
Lab Sample ID	40108983008			
Filename	F150113B_13			
Injected By	CVS			
Total Amount Extracted	19.3 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	13:56
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	22:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.170	-----	0.100	J	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	1.000	-----	0.100		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	0.110		2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	0.190	-----	0.110	J	1,2,3,7,8-PeCDD-13C	2.00	82
					1,2,3,4,7,8-HxCDF-13C	2.00	59
1,2,3,7,8-PeCDF	ND	-----	0.084		1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	-----	0.130	0.058	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	1.300	-----	0.071	J	1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	0.078	-----	0.050	J	1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	0.650	-----	0.050	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	56
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.083	0.059	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	-----	0.051		OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	-----	0.056	0.055	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.057		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.500	-----	0.055	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.097	-----	0.068	J	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	0.310	-----	0.075	J			
1,2,3,7,8,9-HxCDD	-----	0.110	0.067	IJ			
Total HxCDD	3.600	-----	0.070				
1,2,3,4,6,7,8-HpCDF	1.700	-----	0.062	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.096		Equivalence: 0.34 ng/Kg		
Total HpCDF	3.600	-----	0.079		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.700	-----	0.048				
Total HpCDD	23.000	-----	0.048				
OCDF	1.700	-----	0.140	BJ			
OCDD	42.000	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10214 LUMB			
Lab Sample ID	40108983009			
Filename	F150113B_14			
Injected By	CVS			
Total Amount Extracted	19.6 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	14:18
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	23:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.36	0.220	IJ	2,3,7,8-TCDF-13C	2.00	52
Total TCDF	3.10	-----	0.220		2,3,7,8-TCDD-13C	2.00	63
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	0.260		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	0.37	-----	0.260	J	1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	-----	0.16	0.110	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	53
Total PeCDF	3.40	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	53
					1,2,3,4,7,8-HxCDD-13C	2.00	47
1,2,3,7,8-PeCDD	ND	-----	0.120		1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.94	-----	0.120	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	46
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	0.21	-----	0.120	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	52
1,2,3,6,7,8-HxCDF	-----	0.21	0.080	IJ	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	-----	0.14	0.089	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.140		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.50	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.180		2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	-----	0.48	0.130	IJ			
1,2,3,7,8,9-HxCDD	0.28	-----	0.140	J			
Total HxCDD	4.40	-----	0.150				
1,2,3,4,6,7,8-HpCDF	3.00	-----	0.120		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.140		Equivalence: 0.58 ng/Kg		
Total HpCDF	6.70	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	9.80	-----	0.290				
Total HpCDD	44.00	-----	0.290				
OCDF	-----	3.50	0.340	IJ			
OCDD	95.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 102214 LUMB			
Lab Sample ID	40108983010			
Filename	F150113B_15			
Injected By	CVS			
Total Amount Extracted	20.2 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	10/22/2014	15:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	23:48

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.086		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	0.14	-----	0.086	J	2,3,7,8-TCDD-13C	2.00	98
					1,2,3,7,8-PeCDF-13C	2.00	95
2,3,7,8-TCDD	ND	-----	0.099		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	-----	0.099		1,2,3,7,8-PeCDD-13C	2.00	106
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.050		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	ND	-----	0.040		2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	ND	-----	0.045		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	ND	-----	0.063		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.063		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	ND	-----	0.042		1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	ND	-----	0.042		OCDD-13C	4.00	67
2,3,4,6,7,8-HxCDF	ND	-----	0.039				
1,2,3,7,8,9-HxCDF	ND	-----	0.053		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.061		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	-----	0.051				
1,2,3,7,8,9-HxCDD	ND	-----	0.050				
Total HxCDD	ND	-----	0.054				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.038		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.060		Equivalence: 0.11 ng/Kg		
Total HpCDF	ND	-----	0.049		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.070	0.062	IJ			
Total HpCDD	ND	-----	0.062				
OCDF	ND	-----	0.130				
OCDD	-----	0.290	0.160	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 102214 LUMB			
Lab Sample ID	40108983011			
Filename	F150114B_07			
Injected By	SMT			
Total Amount Extracted	20.3 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014 08:33	
ICAL ID	F141223	Received	01/07/2015 10:19	
CCal Filename(s)	F150114B_01 & F150115A_07	Extracted	01/08/2015 20:00	
Method Blank ID	BLANK-43557	Analyzed	01/14/2015 19:04	

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.140	----	0.110	J	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	0.780	----	0.110		2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	----	0.130		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	0.260	----	0.130	J	1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	----	0.066		1,2,3,6,7,8-HxCDF-13C	2.00	57
2,3,4,7,8-PeCDF	0.087	----	0.040	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	0.087	----	0.053	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	52
					1,2,3,4,7,8-HxCDD-13C	2.00	49
1,2,3,7,8-PeCDD	0.082	----	0.070	J	1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	0.190	----	0.070	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	41
					1,2,3,4,7,8,9-HpCDF-13C	2.00	41
1,2,3,4,7,8-HxCDF	ND	----	0.060		1,2,3,4,6,7,8-HpCDD-13C	2.00	44
1,2,3,6,7,8-HxCDF	0.079	----	0.059	J	OCDD-13C	4.00	39 R
2,3,4,6,7,8-HxCDF	----	0.069	0.054	IJ			
1,2,3,7,8,9-HxCDF	ND	----	0.069		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.190	----	0.061	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.071		2,3,7,8-TCDD-37Cl4	0.20	64
1,2,3,6,7,8-HxCDD	0.091	----	0.084	J			
1,2,3,7,8,9-HxCDD	ND	----	0.059				
Total HxCDD	0.220	----	0.071	J			
1,2,3,4,6,7,8-HpCDF	----	0.120	0.076	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	----	0.100	0.099	IJ	Equivalence: 0.23 ng/Kg		
Total HpCDF	ND	----	0.087		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.180	----	0.110	J			
Total HpCDD	0.180	----	0.110	J			
OCDF	0.530	----	0.240	BJ			
OCDD	0.740	----	0.280	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10215 LUMB			
Lab Sample ID	40108983012			
Filename	F150114A_05			
Injected By	CVS			
Total Amount Extracted	20.4 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	10:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	05:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.49	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	75
Total TCDF	4.40	-----	0.140		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	-----	0.26	0.160	IJ	2,3,4,7,8-PeCDF-13C	2.00	83
Total TCDD	3.00	-----	0.160		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.25	-----	0.100	J	1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	0.63	-----	0.100	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	8.50	-----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	0.58	-----	0.066	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	1.00	-----	0.066	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	58
1,2,3,4,7,8-HxCDF	0.43	-----	0.100	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	0.37	-----	0.100	J	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	0.42	-----	0.075	J			
1,2,3,7,8,9-HxCDF	-----	0.18	0.100	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	13.00	-----	0.096		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.23	-----	0.130	J	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.20	-----	0.180	J			
1,2,3,7,8,9-HxCDD	0.47	-----	0.110	J			
Total HxCDD	6.40	-----	0.140				
1,2,3,4,6,7,8-HpCDF	8.00	-----	0.093		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.28	-----	0.150	BJ	Equivalence: 1.5 ng/Kg		
Total HpCDF	16.00	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.00	-----	0.090				
Total HpCDD	11.00	-----	0.090				
OCDF	2.20	-----	0.190	BJ			
OCDD	23.00	-----	0.220				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10216 LUMB			
Lab Sample ID	40108983013			
Filename	F150114A_06			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:10
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	06:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.19	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	4.20	-----	0.140		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	0.096		1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	0.31	-----	0.099	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	3.00	-----	0.098		1,2,3,7,8,9-HxCDF-13C	2.00	67
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	0.12	-----	0.047	J	1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	0.21	-----	0.047	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	0.12	-----	0.092	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	ND	-----	0.088		OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	0.14	-----	0.075	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.099		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.70	-----	0.088	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.12	-----	0.081	J	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	0.26	-----	0.095	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.071				
Total HxCDD	1.20	-----	0.082	J			
1,2,3,4,6,7,8-HpCDF	1.10	-----	0.055	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.13	0.100	IJ	Equivalence: 0.41 ng/Kg		
Total HpCDF	2.10	-----	0.077	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	1.50	-----	0.078	J			
Total HpCDD	4.20	-----	0.078				
OCDF	1.00	-----	0.180	BJ			
OCDD	11.00	-----	0.240				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10217 LUMB			
Lab Sample ID	40108983014			
Filename	F150114A_07			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:10
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	06:48

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.40	0.180	IJ	2,3,7,8-TCDF-13C	2.00	50
Total TCDF	3.90	-----	0.180		2,3,7,8-TCDD-13C	2.00	60
					1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	0.240		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	1.20	-----	0.240		1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	48
1,2,3,7,8-PeCDF	ND	-----	0.180		1,2,3,6,7,8-HxCDF-13C	2.00	50
2,3,4,7,8-PeCDF	-----	0.37	0.120	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	6.60	-----	0.150		1,2,3,7,8,9-HxCDF-13C	2.00	51
					1,2,3,4,7,8-HxCDD-13C	2.00	45
1,2,3,7,8-PeCDD	0.36	-----	0.150	J	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	1.40	-----	0.150	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	46
1,2,3,4,7,8-HxCDF	0.30	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	50
1,2,3,6,7,8-HxCDF	0.29	-----	0.110	J	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	0.33	-----	0.083	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.130		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	10.00	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.21	0.190	IJ	2,3,7,8-TCDD-37Cl4	0.20	58
1,2,3,6,7,8-HxCDD	0.93	-----	0.150	J			
1,2,3,7,8,9-HxCDD	-----	0.30	0.110	IJ			
Total HxCDD	5.00	-----	0.150				
1,2,3,4,6,7,8-HpCDF	7.10	-----	0.090		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.160		Equivalence: 1.00 ng/Kg		
Total HpCDF	13.00	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.40	-----	0.100				
Total HpCDD	11.00	-----	0.100				
OCDF	2.40	-----	0.250	J			
OCDD	22.00	-----	0.270				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10218 LUMB			
Lab Sample ID	40108983015			
Filename	F150114A_08			
Injected By	CVS			
Total Amount Extracted	20.3 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	07:31

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	0.44	0.210	IJ	2,3,7,8-TCDF-13C	2.00	46	
Total TCDF	7.00	-----	0.210		2,3,7,8-TCDD-13C	2.00	53	
					1,2,3,7,8-PeCDF-13C	2.00	53	
2,3,7,8-TCDD	ND	-----	0.320		2,3,4,7,8-PeCDF-13C	2.00	52	
Total TCDD	1.60	-----	0.320		1,2,3,7,8-PeCDD-13C	2.00	57	
					1,2,3,4,7,8-HxCDF-13C	2.00	40	
1,2,3,7,8-PeCDF	ND	-----	0.140		1,2,3,6,7,8-HxCDF-13C	2.00	47	
2,3,4,7,8-PeCDF	0.64	-----	0.120	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	48	
Total PeCDF	7.70	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	44	
					1,2,3,4,7,8-HxCDD-13C	2.00	40	
1,2,3,7,8-PeCDD	0.46	-----	0.200	J	1,2,3,6,7,8-HxCDD-13C	2.00	44	
Total PeCDD	13.00	-----	0.200		1,2,3,4,6,7,8-HpCDF-13C	2.00	41	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	38	R
1,2,3,4,7,8-HxCDF	-----	0.23	0.120	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	44	
1,2,3,6,7,8-HxCDF	0.17	-----	0.110	J	OCDD-13C	4.00	36	R
2,3,4,6,7,8-HxCDF	-----	0.19	0.086	IJ				
1,2,3,7,8,9-HxCDF	ND	-----	0.100		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	1.50	-----	0.100	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	0.63	0.280	IJ	2,3,7,8-TCDD-37Cl4	0.20	45	
1,2,3,6,7,8-HxCDD	3.20	-----	0.240					
1,2,3,7,8,9-HxCDD	1.60	-----	0.280	J				
Total HxCDD	51.00	-----	0.260					
1,2,3,4,6,7,8-HpCDF	1.30	-----	0.120	J	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	0.180		Equivalence: 2.0 ng/Kg			
Total HpCDF	2.90	-----	0.150		(Using 2005 WHO Factors - Using PRL/2 where ND)			
1,2,3,4,6,7,8-HpCDD	45.00	-----	0.089					
Total HpCDD	91.00	-----	0.089					
OCDF	-----	1.50	0.270	IJ				
OCDD	130.00	-----	0.290					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10219 LUMB			
Lab Sample ID	40108983016-R			
Filename	F150120B_09			
Injected By	SMT			
Total Amount Extracted	13.6 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	17:20
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	22:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.35	-----	0.080	J	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	6.00	-----	0.080		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	0.13	-----	0.097	J	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	1.30	-----	0.097		1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.23	-----	0.110	J	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	0.81	-----	0.072	J	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	14.00	-----	0.092		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	0.43	-----	0.100	J	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	2.40	-----	0.100	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	57
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	0.79	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	0.71	-----	0.088	J	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	0.40	-----	0.055	BJ			
1,2,3,7,8,9-HxCDF	-----	0.10	0.098	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	20.00	-----	0.089		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.12	0.096	IJ	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	1.20	-----	0.110	J			
1,2,3,7,8,9-HxCDD	0.39	-----	0.091	J			
Total HxCDD	6.50	-----	0.097				
1,2,3,4,6,7,8-HpCDF	17.00	-----	0.110		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 1.4 ng/Kg		
Total HpCDF	29.00	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.099	J			
Total HpCDD	6.80	-----	0.099				
OCDF	3.00	-----	0.150	J			
OCDD	13.00	-----	0.190				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10220 LUMB			
Lab Sample ID	40108983017			
Filename	F150114A_12			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	10:20
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	10:19

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	----	0.24	0.130	IJ	2,3,7,8-TCDF-13C	2.00	54
Total TCDF	3.50	----	0.130		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	----	0.180		2,3,4,7,8-PeCDF-13C	2.00	62
Total TCDD	ND	----	0.180		1,2,3,7,8-PeCDD-13C	2.00	68
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	0.23	----	0.100	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	56
Total PeCDF	3.40	----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	51
					1,2,3,4,7,8-HxCDD-13C	2.00	47
1,2,3,7,8-PeCDD	----	0.11	0.085	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.68	----	0.085	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	45
					1,2,3,4,7,8,9-HpCDF-13C	2.00	43
1,2,3,4,7,8-HxCDF	----	0.13	0.099	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	0.16	----	0.094	J	OCDD-13C	4.00	41
2,3,4,6,7,8-HxCDF	0.15	----	0.073	J			
1,2,3,7,8,9-HxCDF	ND	----	0.095		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.40	----	0.090		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.088		2,3,7,8-TCDD-37Cl4	0.20	58
1,2,3,6,7,8-HxCDD	----	0.41	0.100	IJ			
1,2,3,7,8,9-HxCDD	----	0.14	0.094	IJ			
Total HxCDD	2.20	----	0.094	J			
1,2,3,4,6,7,8-HpCDF	2.80	----	0.099		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	0.120		Equivalence: 0.47 ng/Kg		
Total HpCDF	5.60	----	0.110		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	----	0.130				
Total HpCDD	9.70	----	0.130				
OCDF	0.90	----	0.200	BJ			
OCDD	17.00	----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10221 LUMB			
Lab Sample ID	40108983018			
Filename	F150114A_13			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	13:40
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	11:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.30	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	8.90	-----	0.140		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	0.23	-----	0.190	J	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	2.30	-----	0.190		1,2,3,7,8-PeCDD-13C	2.00	83
					1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	0.43	-----	0.084	J	1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	1.20	-----	0.062	J	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	21.00	-----	0.073		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	0.61	-----	0.059	J	1,2,3,6,7,8-HxCDD-13C	2.00	58
Total PeCDD	5.10	-----	0.059		1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.82	0.074	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	1.40	-----	0.091	J	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.68	-----	0.074	J			
1,2,3,7,8,9-HxCDF	-----	0.19	0.110	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	31.00	-----	0.088		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.22	0.140	IJ	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,6,7,8-HxCDD	1.90	-----	0.120	J			
1,2,3,7,8,9-HxCDD	0.52	-----	0.098	J			
Total HxCDD	9.40	-----	0.120				
1,2,3,4,6,7,8-HpCDF	25.00	-----	0.085		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 2.1 ng/Kg		
Total HpCDF	43.00	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.30	-----	0.100				
Total HpCDD	7.40	-----	0.100				
OCDF	6.60	-----	0.170				
OCDD	16.00	-----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 111214 LUMB			
Lab Sample ID	40108983019			
Filename	F150114A_14			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/12/2014	15:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	11:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.140		2,3,7,8-TCDF-13C	2.00	52
Total TCDF	ND	-----	0.140		2,3,7,8-TCDD-13C	2.00	61
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	ND	-----	0.082		2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	ND	-----	0.092		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	50
1,2,3,7,8-PeCDD	ND	-----	0.085		1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	0.086	-----	0.085	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	46
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	ND	-----	0.078		1,2,3,4,6,7,8-HpCDD-13C	2.00	52
1,2,3,6,7,8-HxCDF	0.064	-----	0.058	J	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	0.073				
1,2,3,7,8,9-HxCDF	ND	-----	0.088		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.140	-----	0.074	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.090		2,3,7,8-TCDD-37Cl4	0.20	56
1,2,3,6,7,8-HxCDD	ND	-----	0.096				
1,2,3,7,8,9-HxCDD	ND	-----	0.071				
Total HxCDD	ND	-----	0.085				
1,2,3,4,6,7,8-HpCDF	0.089	-----	0.073	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.130		Equivalence: 0.17 ng/Kg		
Total HpCDF	0.089	-----	0.100	B	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.096	-----	0.061	J			
Total HpCDD	0.170	-----	0.061	J			
OCDF	ND	-----	0.200				
OCDD	-----	0.28	0.200	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 111214 LUMB		
Lab Sample ID	40108983020-R		
Filename	F150120B_10		
Injected By	SMT		
Total Amount Extracted	5.00 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/11/2014 12:00
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015 19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015 23:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.39	-----	0.18	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	1.70	-----	0.18	J	2,3,7,8-TCDD-13C	2.00	92
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	0.21		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.21		1,2,3,7,8-PeCDD-13C	2.00	95
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.14		1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	ND	-----	0.13		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	0.13		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.13		1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	ND	-----	0.13		1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	ND	-----	0.13		1,2,3,4,6,7,8-HpCDD-13C	2.00	69
1,2,3,6,7,8-HxCDF	ND	-----	0.14		OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	ND	-----	0.11				
1,2,3,7,8,9-HxCDF	ND	-----	0.16		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.13		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.14		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	ND	-----	0.19				
1,2,3,7,8,9-HxCDD	ND	-----	0.17				
Total HxCDD	ND	-----	0.17				
1,2,3,4,6,7,8-HpCDF	-----	0.34	0.14	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.22		Equivalence: 0.29 ng/Kg		
Total HpCDF	ND	-----	0.18		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.50	-----	0.21	J			
Total HpCDD	0.50	-----	0.21	J			
OCDF	ND	-----	0.34				
OCDD	-----	1.70	0.44	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10222 LUMB			
Lab Sample ID	40108983021			
Filename	F150120B_11			
Injected By	SMT			
Total Amount Extracted	20.8 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	12:05
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	23:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.72	-----	0.053		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	7.40	-----	0.053		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	-----	0.150	0.066	IJ	2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	2.90	-----	0.066		1,2,3,7,8-PeCDD-13C	2.00	87
					1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	0.18	-----	0.047	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	-----	0.370	0.045	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	7.40	-----	0.046		1,2,3,7,8,9-HxCDF-13C	2.00	77
					1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	0.26	-----	0.097	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	3.10	-----	0.097		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	-----	0.170	0.037	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	0.37	-----	0.052	J	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	0.20	-----	0.047	BJ			
1,2,3,7,8,9-HxCDF	-----	0.055	0.041	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	9.00	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.18	-----	0.063	J	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	0.81	-----	0.074	J			
1,2,3,7,8,9-HxCDD	0.33	-----	0.079	J			
Total HxCDD	5.70	-----	0.072				
1,2,3,4,6,7,8-HpCDF	5.60	-----	0.064		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.89 ng/Kg		
Total HpCDF	11.00	-----	0.082		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.063				
Total HpCDD	7.00	-----	0.063				
OCDF	1.60	-----	0.089	J			
OCDD	15.00	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10223 LUMB			
Lab Sample ID	40108983022			
Filename	F150120B_12			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	14:00
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	00:31

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.29	-----	0.074	J	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	2.90	-----	0.074		2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	-----	0.097		2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	0.25	-----	0.097	J	1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	-----	0.068	0.054	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	0.23	-----	0.049	J	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	3.10	-----	0.051		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	0.16	-----	0.059	J	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	0.94	-----	0.059	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
					1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	0.18	-----	0.038	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	0.23	-----	0.047	J	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	-----	0.110	0.056	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.075		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.60	-----	0.054		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.110		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	0.37	-----	0.098	J			
1,2,3,7,8,9-HxCDD	-----	0.120	0.090	IJ			
Total HxCDD	1.40	-----	0.100	J			
1,2,3,4,6,7,8-HpCDF	2.90	-----	0.071		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.097		Equivalence: 0.47 ng/Kg		
Total HpCDF	5.70	-----	0.084		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.20	-----	0.120	J			
Total HpCDD	6.40	-----	0.120				
OCDF	1.30	-----	0.140	J			
OCDD	16.00	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10224 LUMB			
Lab Sample ID	40108983023			
Filename	F150120B_13			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	15:40
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	01:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.56	-----	0.064		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	7.20	-----	0.064		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	0.17	-----	0.058	J	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	1.90	-----	0.058		1,2,3,7,8-PeCDD-13C	2.00	78
					1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	0.16	-----	0.047	J	1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	0.39	-----	0.042	J	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	6.70	-----	0.045		1,2,3,7,8,9-HxCDF-13C	2.00	69
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	0.29	-----	0.071	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	2.50	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	0.22	-----	0.054	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	-----	0.220	0.052	IJ	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.13	-----	0.041	BJ			
1,2,3,7,8,9-HxCDF	-----	0.052	0.043	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	5.40	-----	0.048		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.110	0.049	IJ	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.58	-----	0.060	J			
1,2,3,7,8,9-HxCDD	-----	0.130	0.054	IJ			
Total HxCDD	3.60	-----	0.054				
1,2,3,4,6,7,8-HpCDF	3.70	-----	0.058		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.072		Equivalence: 0.84 ng/Kg		
Total HpCDF	7.00	-----	0.065		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.00	-----	0.074	J			
Total HpCDD	5.70	-----	0.074				
OCDF	1.20	-----	0.130	J			
OCDD	11.00	-----	0.091				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10225 LUMB			
Lab Sample ID	40108983024			
Filename	F150120B_14			
Injected By	SMT			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	16:05
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	01:55

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.550	-----	0.065		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	5.600	-----	0.065		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	-----	0.12	0.068	IJ	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	2.200	-----	0.068		1,2,3,7,8-PeCDD-13C	2.00	81
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	-----	0.11	0.078	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	0.380	-----	0.074	J	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	7.500	-----	0.076		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	0.290	-----	0.094	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	2.900	-----	0.094		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	0.310	-----	0.045	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	-----	0.39	0.046	IJ	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	0.240	-----	0.037	BJ			
1,2,3,7,8,9-HxCDF	0.098	-----	0.049	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	8.500	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.160	-----	0.087	J	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	0.860	-----	0.092	J			
1,2,3,7,8,9-HxCDD	0.260	-----	0.062	J			
Total HxCDD	5.600	-----	0.080				
1,2,3,4,6,7,8-HpCDF	5.500	-----	0.048		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.087		Equivalence: 0.90 ng/Kg		
Total HpCDF	10.000	-----	0.067		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.000	-----	0.081				
Total HpCDD	8.300	-----	0.081				
OCDF	1.400	-----	0.100	J			
OCDD	16.000	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10226 LUMB			
Lab Sample ID	40108983025			
Filename	F150120B_15			
Injected By	SMT			
Total Amount Extracted	18.6 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	16:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	02:37

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.330	-----	0.052	J	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	2.700	-----	0.052		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	0.095	-----	0.080	J	2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	0.370	-----	0.080	J	1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	-----	0.050	0.034	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	0.190	-----	0.036	J	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	4.000	-----	0.035		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	-----	0.110	0.054	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	63
Total PeCDD	1.100	-----	0.054	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	0.160	-----	0.054	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	0.190	-----	0.046	J	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	0.180	-----	0.032	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.042		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.200	-----	0.043		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.086	0.054	IJ	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	0.550	-----	0.073	J			
1,2,3,7,8,9-HxCDD	0.220	-----	0.060	J			
Total HxCDD	4.900	-----	0.062				
1,2,3,4,6,7,8-HpCDF	6.600	-----	0.051		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.070		Equivalence: 0.58 ng/Kg		
Total HpCDF	13.000	-----	0.061		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.900	-----	0.051				
Total HpCDD	18.000	-----	0.051				
OCDF	2.500	-----	0.130	J			
OCDD	81.000	-----	0.140				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10254 LUMB			
Lab Sample ID	40108983026			
Filename	F150120B_16			
Injected By	SMT			
Total Amount Extracted	20.4 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/12/2014	09:00
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	03:19

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.320	-----	0.063	J	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	2.000	-----	0.063		2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	0.950	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	75
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	0.086	-----	0.049	J	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	-----	0.26	0.039	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	4.300	-----	0.044		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	0.190	-----	0.071	J	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	1.600	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.16	0.058	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	0.240	-----	0.047	J	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.100	-----	0.044	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.059		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.500	-----	0.052		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.11	0.079	IJ	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	-----	0.49	0.091	IJ			
1,2,3,7,8,9-HxCDD	-----	0.13	0.075	IJ			
Total HxCDD	2.800	-----	0.082				
1,2,3,4,6,7,8-HpCDF	5.100	-----	0.068		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.55 ng/Kg		
Total HpCDF	9.500	-----	0.086		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.100	-----	0.088	J			
Total HpCDD	5.100	-----	0.088				
OCDF	1.100	-----	0.200	J			
OCDD	9.700	-----	0.140				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10256 LUMB			
Lab Sample ID	40108983027			
Filename	F150120B_17			
Injected By	SMT			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/12/2014	12:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	04:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.110	-----	0.044	J	2,3,7,8-TCDF-13C	2.00	66
Total TCDF	0.710	-----	0.044		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	0.065		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	0.290	-----	0.065	J	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	0.030		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.031		2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.030		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	0.040		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	0.086	-----	0.040	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	-----	0.036		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	-----	0.033		OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	-----	0.031				
1,2,3,7,8,9-HxCDF	ND	-----	0.044		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.045	-----	0.036	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.039		2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	0.055	-----	0.047	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.037				
Total HxCDD	0.190	-----	0.041	J			
1,2,3,4,6,7,8-HpCDF	-----	0.077	0.043	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.049		Equivalence: 0.087 ng/Kg		
Total HpCDF	ND	-----	0.046		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.110	0.046	IJ			
Total HpCDD	ND	-----	0.046				
OCDF	ND	-----	0.110				
OCDD	0.530	-----	0.130	BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-43557	Matrix	Tissue
Filename	F150113B_05	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	01/08/2015 20:00
ICAL ID	F141223	Analyzed	01/13/2015 16:48
CCal Filename(s)	F150113B_01 & F150113B_18	Injected By	CVS

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.130		2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	-----	0.130		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	101
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.061		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	0.077	-----	0.051	J	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	0.077	-----	0.056	J	1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.066		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.066		1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.051		1,2,3,4,6,7,8-HpCDD-13C	2.00	83
1,2,3,6,7,8-HxCDF	ND	-----	0.041		OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	ND	-----	0.047				
1,2,3,7,8,9-HxCDF	ND	-----	0.061		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.059	-----	0.050	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.046		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	ND	-----	0.051				
1,2,3,7,8,9-HxCDD	ND	-----	0.047				
Total HxCDD	ND	-----	0.048				
1,2,3,4,6,7,8-HpCDF	-----	0.053	0.040	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.096	-----	0.057	J	Equivalence: 0.16 ng/Kg		
Total HpCDF	0.096	-----	0.048	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.052				
Total HpCDD	ND	-----	0.052				
OCDF	0.230	-----	0.120	J			
OCDD	-----	0.320	0.160	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-43659	Matrix	Tissue
Filename	F150120B_07	Dilution	NA
Total Amount Extracted	20.4 g	Extracted	01/15/2015 19:45
ICAL ID	F141223	Analyzed	01/20/2015 21:01
CCal Filename(s)	F150120B_02 & F150120B_21	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.054		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.054		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	-----	0.074		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	ND	-----	0.074		1,2,3,7,8-PeCDD-13C	2.00	86
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	0.045		1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	0.032		2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	ND	-----	0.038		1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	-----	0.051		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.051		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	-----	0.033		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	0.030		OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	0.041	-----	0.025	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.038		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.041	-----	0.031	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.054		2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	ND	-----	0.061				
1,2,3,7,8,9-HxCDD	ND	-----	0.049				
Total HxCDD	ND	-----	0.055				
1,2,3,4,6,7,8-HpCDF	-----	0.047	0.036	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.062		Equivalence: 0.089 ng/Kg		
Total HpCDF	0.051	-----	0.049	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.060				
Total HpCDD	ND	-----	0.060				
OCDF	ND	-----	0.110				
OCDD	0.200	-----	0.140	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-43558		
Filename	F150113B_16	Matrix	Tissue
Total Amount Extracted	21.5 g	Dilution	NA
ICAL ID	F141223	Extracted	01/08/2015 20:00
CCal Filename(s)	F150113B_01 & F150113B_18	Analyzed	01/14/2015 00:30
Method Blank ID	BLANK-43557	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	117	2,3,7,8-TCDF-13C	2.0	71
Total TCDF				2,3,7,8-TCDD-13C	2.0	86
				1,2,3,7,8-PeCDF-13C	2.0	87
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.0	87
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	98
				1,2,3,4,7,8-HxCDF-13C	2.0	67
1,2,3,7,8-PeCDF	1.0	1.2	118	1,2,3,6,7,8-HxCDF-13C	2.0	77
2,3,4,7,8-PeCDF	1.0	1.2	119	2,3,4,6,7,8-HxCDF-13C	2.0	76
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	76
				1,2,3,4,7,8-HxCDD-13C	2.0	68
1,2,3,7,8-PeCDD	1.0	0.99	99	1,2,3,6,7,8-HxCDD-13C	2.0	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	68
				1,2,3,4,7,8,9-HpCDF-13C	2.0	70
1,2,3,4,7,8-HxCDF	1.0	1.2	120	1,2,3,4,6,7,8-HpCDD-13C	2.0	76
1,2,3,6,7,8-HxCDF	1.0	1.2	117	OCDD-13C	4.0	68
2,3,4,6,7,8-HxCDF	1.0	1.1	113			
1,2,3,7,8,9-HxCDF	1.0	1.1	115	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	118	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	1.0	1.2	124			
1,2,3,7,8,9-HxCDD	1.0	1.2	123			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	115			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	108			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	103			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.3	117			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-43660		
Filename	F150120B_18	Matrix	Tissue
Total Amount Extracted	21.1 g	Dilution	NA
ICAL ID	F141223	Extracted	01/15/2015 19:45
CCal Filename(s)	F150120B_02 & F150120B_21	Analyzed	01/21/2015 04:43
Method Blank ID	BLANK-43659	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	119	2,3,7,8-TCDF-13C	2.0	66
Total TCDF				2,3,7,8-TCDD-13C	2.0	79
				1,2,3,7,8-PeCDF-13C	2.0	68
2,3,7,8-TCDD	0.20	0.20	101	2,3,4,7,8-PeCDF-13C	2.0	69
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	77
				1,2,3,4,7,8-HxCDF-13C	2.0	69
1,2,3,7,8-PeCDF	1.0	1.2	122	1,2,3,6,7,8-HxCDF-13C	2.0	77
2,3,4,7,8-PeCDF	1.0	1.2	121	2,3,4,6,7,8-HxCDF-13C	2.0	77
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	71
				1,2,3,4,7,8-HxCDD-13C	2.0	69
1,2,3,7,8-PeCDD	1.0	1.0	102	1,2,3,6,7,8-HxCDD-13C	2.0	68
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	67
				1,2,3,4,7,8,9-HpCDF-13C	2.0	64
1,2,3,4,7,8-HxCDF	1.0	1.2	122	1,2,3,4,6,7,8-HpCDD-13C	2.0	70
1,2,3,6,7,8-HxCDF	1.0	1.2	118	OCDD-13C	4.0	58
2,3,4,6,7,8-HxCDF	1.0	1.1	111			
1,2,3,7,8,9-HxCDF	1.0	1.1	113	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	114	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	1.0	1.3	130			
1,2,3,7,8,9-HxCDD	1.0	1.3	126			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	117			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	108			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.5	123			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-43559		
Filename	F150113B_17	Matrix	Tissue
Total Amount Extracted	20.3 g	Dilution	NA
ICAL ID	F141223	Extracted	01/08/2015 20:00
CCal Filename(s)	F150113B_01 & F150113B_18	Analyzed	01/14/2015 01:12
Method Blank ID	BLANK-43557	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.0	78
Total TCDF				2,3,7,8-TCDD-13C	2.0	93
				1,2,3,7,8-PeCDF-13C	2.0	88
2,3,7,8-TCDD	0.20	0.18	92	2,3,4,7,8-PeCDF-13C	2.0	91
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	99
				1,2,3,4,7,8-HxCDF-13C	2.0	73
1,2,3,7,8-PeCDF	1.0	1.2	122	1,2,3,6,7,8-HxCDF-13C	2.0	82
2,3,4,7,8-PeCDF	1.0	1.2	119	2,3,4,6,7,8-HxCDF-13C	2.0	80
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	79
				1,2,3,4,7,8-HxCDD-13C	2.0	74
1,2,3,7,8-PeCDD	1.0	1.0	102	1,2,3,6,7,8-HxCDD-13C	2.0	76
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	73
				1,2,3,4,7,8,9-HpCDF-13C	2.0	76
1,2,3,4,7,8-HxCDF	1.0	1.2	122	1,2,3,4,6,7,8-HpCDD-13C	2.0	80
1,2,3,6,7,8-HxCDF	1.0	1.2	118	OCDD-13C	4.0	74
2,3,4,6,7,8-HxCDF	1.0	1.1	113			
1,2,3,7,8,9-HxCDF	1.0	1.2	118	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	119	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	1.0	1.3	126			
1,2,3,7,8,9-HxCDD	1.0	1.2	122			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	116			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	110			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	107			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.4	122			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-43661		
Filename	F150120B_19	Matrix	Tissue
Total Amount Extracted	20.8 g	Dilution	NA
ICAL ID	F141223	Extracted	01/15/2015 19:45
CCal Filename(s)	F150120B_02 & F150120B_21	Analyzed	01/21/2015 05:25
Method Blank ID	BLANK-43659	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.0	69
Total TCDF				2,3,7,8-TCDD-13C	2.0	83
				1,2,3,7,8-PeCDF-13C	2.0	73
2,3,7,8-TCDD	0.20	0.20	99	2,3,4,7,8-PeCDF-13C	2.0	74
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	82
				1,2,3,4,7,8-HxCDF-13C	2.0	71
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	81
2,3,4,7,8-PeCDF	1.0	1.1	115	2,3,4,6,7,8-HxCDF-13C	2.0	81
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	73
				1,2,3,4,7,8-HxCDD-13C	2.0	71
1,2,3,7,8-PeCDD	1.0	1.0	101	1,2,3,6,7,8-HxCDD-13C	2.0	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	69
				1,2,3,4,7,8,9-HpCDF-13C	2.0	65
1,2,3,4,7,8-HxCDF	1.0	1.2	120	1,2,3,4,6,7,8-HpCDD-13C	2.0	73
1,2,3,6,7,8-HxCDF	1.0	1.1	111	OCDD-13C	4.0	61
2,3,4,6,7,8-HxCDF	1.0	1.1	108			
1,2,3,7,8,9-HxCDF	1.0	1.1	113	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	116	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.0	1.2	123			
1,2,3,7,8,9-HxCDD	1.0	1.2	123			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	117			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	112			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106			
Total HpCDD						
OCDF	2.0	2.3	117			
OCDD	2.0	2.4	119			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	PASI Wisconsin		
Spike 1 ID	LCS-43558	Spike 2 ID	LCSD-43559
Spike 1 Filename	F150113B_16	Spike 2 Filename	F150113B_17

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	117	116	0.9
2,3,7,8-TCDD	93	92	1.1
1,2,3,7,8-PeCDF	118	122	3.3
2,3,4,7,8-PeCDF	119	119	0.0
1,2,3,7,8-PeCDD	99	102	3.0
1,2,3,4,7,8-HxCDF	120	122	1.7
1,2,3,6,7,8-HxCDF	117	118	0.9
2,3,4,6,7,8-HxCDF	113	113	0.0
1,2,3,7,8,9-HxCDF	115	118	2.6
1,2,3,4,7,8-HxCDD	118	119	0.8
1,2,3,6,7,8-HxCDD	124	126	1.6
1,2,3,7,8,9-HxCDD	123	122	0.8
1,2,3,4,6,7,8-HpCDF	115	116	0.9
1,2,3,4,7,8,9-HpCDF	108	110	1.8
1,2,3,4,6,7,8-HpCDD	103	107	3.8
OCDF	120	120	0.0
OCDD	117	122	4.2

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

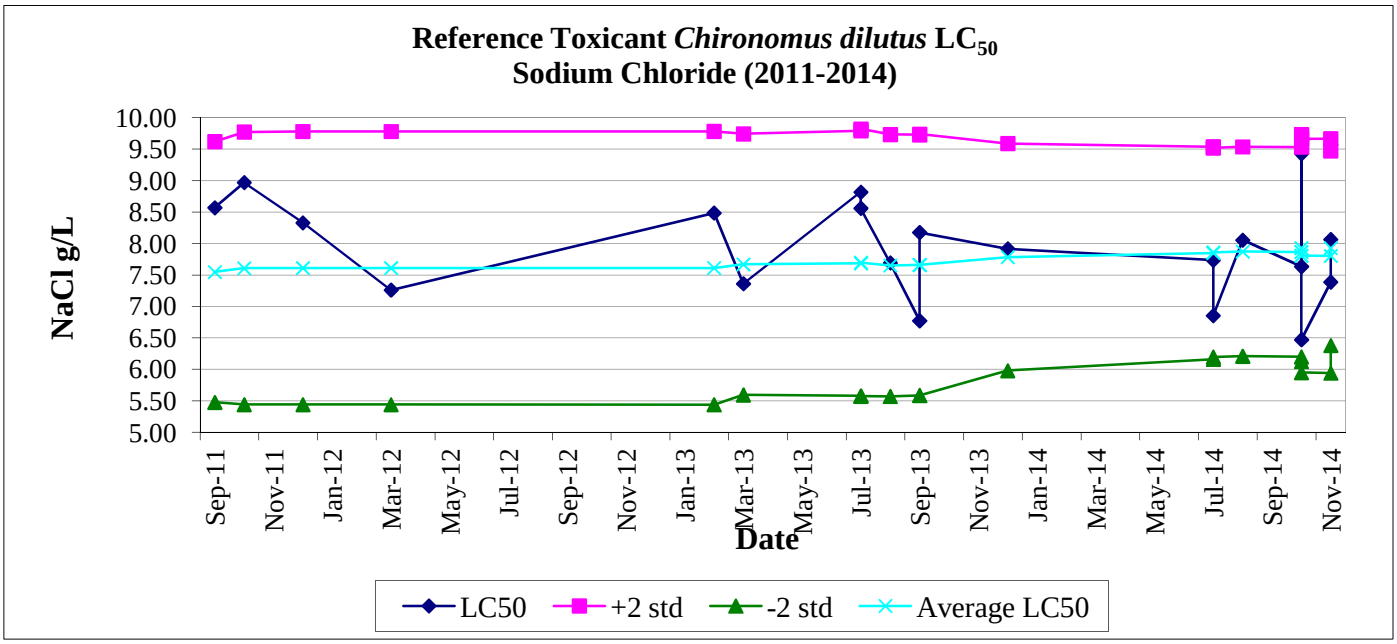
Client	PASI Wisconsin		
Spike 1 ID	LCS-43660	Spike 2 ID	LCSD-43661
Spike 1 Filename	F150120B_18	Spike 2 Filename	F150120B_19

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	119	116	2.6
2,3,7,8-TCDD	101	99	2.0
1,2,3,7,8-PeCDF	122	117	4.2
2,3,4,7,8-PeCDF	121	115	5.1
1,2,3,7,8-PeCDD	102	101	1.0
1,2,3,4,7,8-HxCDF	122	120	1.7
1,2,3,6,7,8-HxCDF	118	111	6.1
2,3,4,6,7,8-HxCDF	111	108	2.7
1,2,3,7,8,9-HxCDF	113	113	0.0
1,2,3,4,7,8-HxCDD	114	116	1.7
1,2,3,6,7,8-HxCDD	130	123	5.5
1,2,3,7,8,9-HxCDD	126	123	2.4
1,2,3,4,6,7,8-HpCDF	117	117	0.0
1,2,3,4,7,8,9-HpCDF	108	112	3.6
1,2,3,4,6,7,8-HpCDD	106	106	0.0
OCDF	120	117	2.5
OCDD	123	119	3.3

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

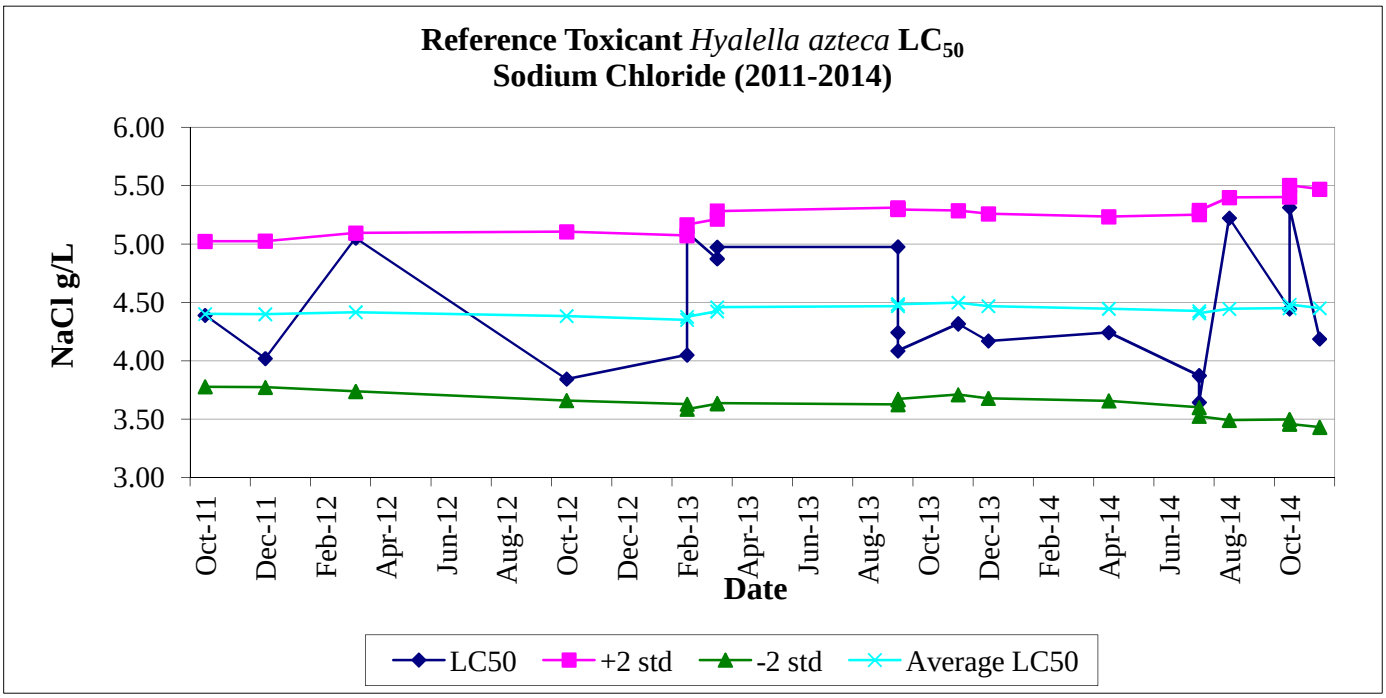
This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix G
Reference Toxicant Data



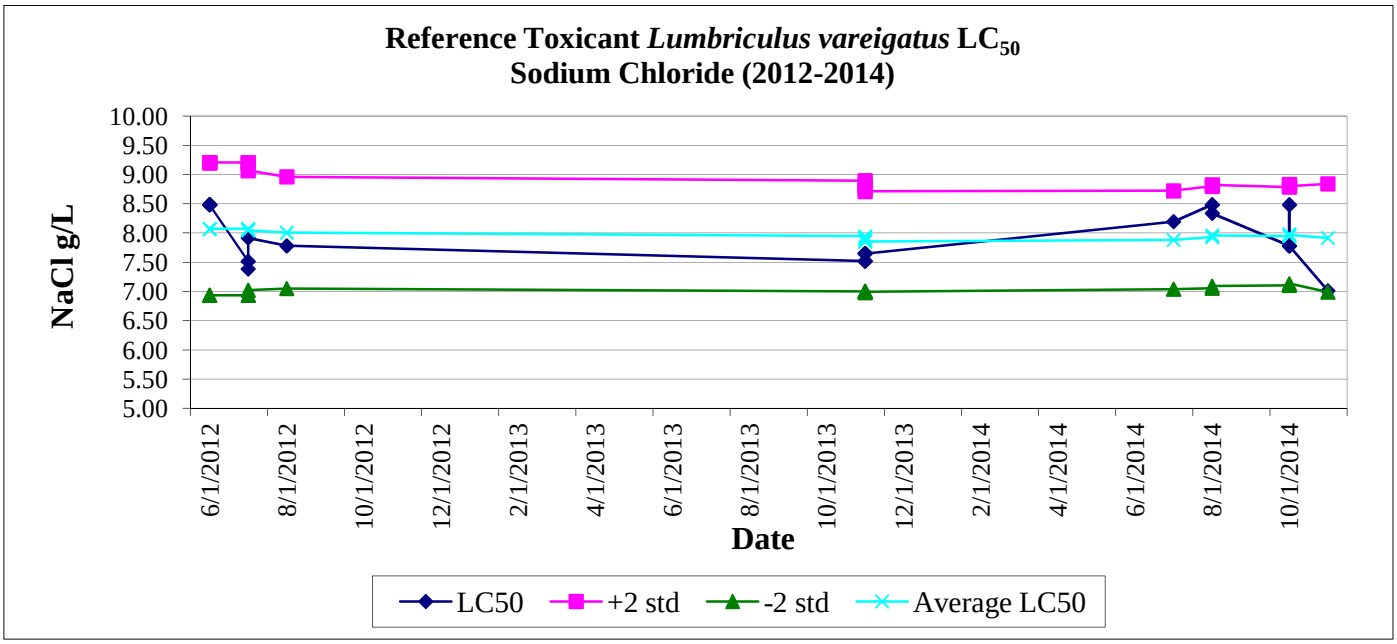
96-Hour Acute Toxicity Data for *Chironomus dilutus*

Date	Control Survival (%)	LC_{50} (g/L NaCl)	Average LC_{50} (g/L NaCl)	+2 std	-2 std
October 1, 2014	92.5	7.64	7.87	9.53	6.20
October 4, 2014	92.5	9.43	7.93	9.73	6.12
October 17, 2014	92.2	6.47	7.81	9.67	5.95
November 4, 2014	100.0	7.39	7.80	9.67	5.94
November 11, 2014	90.0	8.06	7.93	9.47	6.38



96-Hour Acute Toxicity Data for
Hyalella azteca

Date	Control Survival (%)	LC_{50} (g/L NaCl)	Average LC_{50} (g/L NaCl)	+2 std	-2 std
July 23, 2014	100.0	3.64	4.41	5.29	3.53
August 13, 2014	100.0	5.22	4.44	5.40	3.49
October 1, 2014	92.5	4.44	4.45	5.40	3.50
October 4, 2014	100.0	5.31	4.48	5.50	3.46
November 11, 2014	100.0	4.19	4.45	5.47	3.43



96-Hour Acute Toxicity Data for *Lumbriculus vareigatus*

Date	Control Survival (%)	LC_{50} (g/L NaCl)	Average LC_{50} (g/L NaCl)	+2 std	-2 std
August 25, 2014	100.0	8.3395	7.96	8.83	7.09
October 6, 2014	100.0	7.781	7.95	8.79	7.11
October 20, 2014	100.0	8.4853	7.98	8.84	7.13
October 28, 2014	100.0	7.781	7.97	8.80	7.14
November 25, 2014	100.0	7.0127	7.92	8.84	6.99

Appendix H
Macroinvertebrate Taxonomy

- Chain of Custody
- Dataset

GREAT LAKES ENVIRONMENTAL CENTER, INC.

CHAIN OF CUSTODY RECORD

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information: Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers: Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10227	SS1029-BCA (15cm)	9-17-14	0840	S	C	FORMALIN	POLY	1-GAL	1		X								
2	10228	SS1001-BCA (15cm)	9-17-14	~~0840~~ 1200	S	C	FORMALIN	POLY	1-GAL	1		X								
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10229	SS1002-BGA (15cm)	9-18-14	1615	S	C	FORMALIN	POLY	1-GAL	1		X								
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1800	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

CHAIN OF CUSTODY RECORD

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10230	SS 1021-BCA (15cm)	9-18-14	1020	S	C	FORMALIN	POLY	1-GAL	1		X
2												
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1200	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1200	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GLEC
Great Lakes Environmental Center

GREAT LAKES ENVIRONMENTAL CENTER, INC.

TRAVERSE CITY, MI - LABORATORY
739 Hastings Street
Traverse City, MI 49686

www.glec.com
Phone (231)941-2230
Fax (231)941-2240

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC
Report Results To: DAVID CONSTANT
Address: 6188 ROME CIRCLE NW ROCHESTER, MN 55901
Phone: 507. 529. 6045
E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT
Project Number: 193702726.200
P.O.#:
Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	MACROINVERTEBRATES
1	10231	SS 1032 - BCA (15cm)	9-15-14	1545	SEDIMENT	C	10% FORMALIN	POLY	1-GAL	1	X
2	10232	SS 1021 - BCA (15cm)	9-15-14	1810	SEDIMENT	C	10% FORMALIN	POLY	1-GAL	1	X
3											
4											
5											
6											
7											
8											

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	~~9-17-14~~ ~~9-16-14~~	~~1600~~ ~~1900~~	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	~~9-17-14~~ ~~9-16-14~~	~~1600~~ ~~1900~~	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY
Temperature of Samples: NA °C
☐ Received on Wet Ice
Notes/Anomalies/Discrepancies: None
GLEC may subcontract out analyses that we do not perform.

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information: Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers: Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10235	SS 1042 - BCA (15cm)	9-17-14	0940	S	C	FORMALIN	POLY	1-GAL	1		X
2	10234	SS 1028 - BCA (15cm)	9-16-14	1530	S	C	FORMALIN	POLY	1-GAL	1		X
3	10235	SS 1010 - BCA (15cm)	9-17-14	1105	S	C	FORMALIN	POLY	1-GAL	1		X
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C ☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	102356	SS 1025-BCA (15 cm)	9-16-14	1150	S	C	FORMALIN	POLY	1-GAL	1		X								
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton GLEC	9/19/14	103
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton GLEC	9/19/14	103
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: NA °C ☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10237	SS 1026-BCA (15cm)	9-16-14	1445	S	C	FORMALIN	POLY	1-GAL	1		X								
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton	9/19/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	102380	SS 1033-BCA (15cm)	9-18-14	0855	S	C	FORMALIN	POLY	1-GAL	1		X								
2	102369	SS 1034-BCA (15cm)	9-18-14	0940	S	C	FORMALIN	POLY	1-GAL	1		X								
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1200	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-18-14	1200	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information: Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers: Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10241	SS 1024-BCA (15cm)	9-16-14	1045	S	C	FORMALIN	POLY	1-GAL	1		X								
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton	9/19/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10240	SS 1022 - BCA (15cm)	9-16-14	0900	S	C	FORMALIN	POLY	1-GAL	1		X								
2																				
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-17-14	1600	Print Name & Organization: Kelly Stratton GLEC	9/19/14	1030
Signature: Matthew Pontier	9-17-14	1600	Signature: Kelly Stratton	9/19/14	1030
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: NA °C

☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: None

MATRIX CODES:	S = SEDIMENT	E = EFFLUENT	WW = WASTEWATER	SL = SLUDGE
	SW = SURFACE WATER	GW = GROUNDWATER	BT = BIOLOGICAL TISSUE	AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

Requested Analysis: WHOLE SEDIMENT TOXICITY; MACROINVERTEBRATES

#	GLEC No.	Sample Identification	Sample Information: Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers: Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10258	SS 1017-BCA (15cm)	9-18-14	1400	S	C	FORMALIN	POLY	1-GAL	1		X
2	10259	SS 1011-BCA (15cm)	9-18-14	1440	S	C	FORMALIN	POLY	1-GAL	1		X
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Don Smith	9/23/14	1110
Signature: Matthew Pontier	9-18-14	1800	Signature: [illegible]		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY

Temperature of Samples: N/A °C ☐ Received on Wet Ice

Notes/Anomalies/Discrepancies: Good

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

CHAIN OF CUSTODY RECORD

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10260	SS1009-BCA (15cm)	9-18-14	1500	S	C	FORMALIN	POLY	1-GAL	1		X								
2	10261	SS1005-BCA (15cm)	9-18-14	1535	S	C	FORMALIN	POLY	1-GAL	1		X								
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-18-14	1800	Print Name & Organization: Dan Smith GLEC	9/23/14	1110
Signature: Matthew Pontier	9-18-14	1800	Signature: [signature]		
Print Name & Organization			Print Name & Organization		
Signature			Signature		

FOR LAB USE ONLY
Temperature of Samples: N/A °C
☐ Received on Wet Ice
Notes/Anomalies/Discrepancies: G-001

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials
☐ GLEC ☒ Client STANTEC

Requested Analysis

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES
1	10254	SS1041-AT (15cm)	9-19-14	0840	S	C	NONE	POLY	3-GAL	1	X	
2	10255	SS1041-BCA (15cm)	9-19-14	0840	S	C	FORMALIN	POLY	1-GAL	1		X
3												
4												
5												
6												
7												
8												

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-22-14	1700	Print Name & Organization: Dan Smith GLEC	9/23/14	1110
Signature: Matthew Pontier	9-22-14	1700	Signature: [illegible]		
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: 5.4 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies:

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

GREAT LAKES ENVIRONMENTAL CENTER, INC.

COLUMBUS, OH - LABORATORY
1295 King Avenue
Columbus, OH 43212

www.glec.com
Phone (614)487-1040
Fax (614)487-1920

CHAIN OF CUSTODY RECORD

Submitting Company: STANTEC

Report Results To: DAVID CONSTANT

Address: 6188 ROME CIRCLE NW, ROCHESTER, MN 55901

Phone: 507.529.6045

E-mail: david.constant@stantec.com

Project Name: 40th AVENUE PROJECT

Project Number: 193702726.200

P.O.#:

Sampled by: initials ☐ GLEC _____ ☒ Client STANTEC

#	GLEC No.	Sample Identification	Sample Information Date	Time	Matrix	Grab or Composite	Preservative	Sample Containers Type	Size	No.	Requested Analysis: WHOLE SEDIMENT TOXICITY	MACROINVERTEBRATES								
1	10256	SS1012-AT (15cm)	9-19-14	1145	S	C	NONE	POLY	3-GAL	1	X									
2	10257	SS1012-BTA (15cm)	9-19-14	1145	S	C	FORMALIN	POLY	1-GAL	1		X								
3																				
4																				
5																				
6																				
7																				
8																				

Client Notes:

RELEASED BY / ORGANIZATION	DATE	TIME	RECEIVED BY / ORGANIZATION	DATE	TIME
Print Name & Organization: MATTHEW PONTIER / STANTEC	9-22-14	1700	Print Name & Organization: Dan Smith Glec	9/23/14	1110
Signature: Matthew Pontier	9-22-14	1700	Signature:		
Print Name & Organization:			Print Name & Organization:		
Signature:			Signature:		

FOR LAB USE ONLY

Temperature of Samples: 5.2 °C

☒ Received on Wet Ice

Notes/Anomalies/Discrepancies: GOOD

MATRIX CODES: S = SEDIMENT; SW = SURFACE WATER; E = EFFLUENT; GW = GROUNDWATER; WW = WASTEWATER; BT = BIOLOGICAL TISSUE; SL = SLUDGE; AO = AQUATIC ORGANISM

Great Lakes Environmental Center, Inc.
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Project
GLEC Project Number: 2290-04

Site ID	nple Collection D	t Num	GLECNo	Sample ID	TaxaName	Total Count	Expr1009	Expr1010	Phylum	Class
SS 1029-BCA		0	10227		Ablabesmyia	2	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Bezzia/Palpomyia	1	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Caenis	1	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Chironomus	1	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Cryptochironomus	10	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Dicrotendipes	5	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Dreissena	1	0	30	Mollusca	Pelecypoda
SS 1029-BCA		0	10227		Hexagenia	10	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Lumbriculus	1	0	30	Annelida	Oligochaeta
SS 1029-BCA		0	10227		Nemata	40	0	30	Nemata	
SS 1029-BCA		0	10227		Oecetis	11	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Parakiefferiella	2	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Phylocentropus	2	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Pisidium	1	0	30	Mollusca	Pelecypoda
SS 1029-BCA		0	10227		Procladius	10	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Sperchon	1	0	30	Arthropoda	Arachnida
SS 1029-BCA		0	10227		Stictochironomus	6	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Tanytarsus	1	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Tipula	4	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Tribelos	2	0	30	Arthropoda	Insecta
SS 1029-BCA		0	10227		Tubificidae	3	0	30	Annelida	Oligochaeta
SS 1001-BCA		0	10228		Bezzia/Palpomyia	3	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Chaoborus	2	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Chironomus	1	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Coelotanypus	2	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Cryptochironomus	2	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Epoicocladius	2	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Hexagenia	2	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Hydrobiidae	1	0	30	Mollusca	Gastropoda
SS 1001-BCA		0	10228		Nemata	5	0	30	Nemata	
SS 1001-BCA		0	10228		Pisidium	3	0	30	Mollusca	Pelecypoda
SS 1001-BCA		0	10228		Procladius	14	0	30	Arthropoda	Insecta
SS 1001-BCA		0	10228		Tubificidae	3	0	30	Annelida	Oligochaeta

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Order	Family	Subfamily	Tribe	SpeciesName	TSN	Distinct
SS 1029-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1029-BCA	Diptera	Ceratopogonidae					TRUE
SS 1029-BCA	Ephemeroptera	Caenidae			sp.	101478	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1029-BCA	Veneroida	Dreissenidae			polymorpha	81338	TRUE
SS 1029-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1029-BCA	Lumbriculida	Lumbriculidae			sp.	68441	TRUE
SS 1029-BCA							TRUE
SS 1029-BCA	Trichoptera	Leptoceridae			sp.	116607	TRUE
SS 1029-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128968	TRUE
SS 1029-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1029-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1029-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1029-BCA	Trombidiformes	Sperchonidae			sp.	83006	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129785	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Tanytarsini	sp.	129978	TRUE
SS 1029-BCA	Diptera	Tipulidae			sp.	119037	TRUE
SS 1029-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1029-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1001-BCA	Diptera	Ceratopogonidae					TRUE
SS 1001-BCA	Diptera	Chaoboridae			sp.	125904	TRUE
SS 1001-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1001-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1001-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1001-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128682	TRUE
SS 1001-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1001-BCA	Neotaenioglossa	Hydrobiidae				70493	TRUE
SS 1001-BCA							TRUE
SS 1001-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1001-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1001-BCA	Tubificida	Tubificidae				68585	TRUE

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Adult	Pupae	Larvae	N/A	Nymph	GridPicked	GridPossible	SamplePortion	Field0	Field1
SS 1029-BCA			2			0	30		2	
SS 1029-BCA			1			0	30		1	
SS 1029-BCA			1			0	30		1	
SS 1029-BCA			1			0	30		1	
SS 1029-BCA			10			0	30		10	
SS 1029-BCA			5			0	30		5	
SS 1029-BCA				1		0	30			1
SS 1029-BCA			10			0	30		10	
SS 1029-BCA				1		0	30			1
SS 1029-BCA				40		0	30			40
SS 1029-BCA			11			0	30		11	
SS 1029-BCA			2			0	30		2	
SS 1029-BCA			2			0	30		2	
SS 1029-BCA				1		0	30			1
SS 1029-BCA			10			0	30		10	
SS 1029-BCA				1		0	30			1
SS 1029-BCA			6			0	30		6	
SS 1029-BCA			1			0	30		1	
SS 1029-BCA			4			0	30		4	
SS 1029-BCA			2			0	30		2	
SS 1029-BCA				3		0	30			3
SS 1001-BCA			3			0	30		3	
SS 1001-BCA			2			0	30		2	
SS 1001-BCA			1			0	30		1	
SS 1001-BCA			2			0	30		2	
SS 1001-BCA			2			0	30		2	
SS 1001-BCA			2			0	30		2	
SS 1001-BCA			2			0	30		2	
SS 1001-BCA				1		0	30			1
SS 1001-BCA				5		0	30			5
SS 1001-BCA				3		0	30			3
SS 1001-BCA			14			0	30		14	
SS 1001-BCA				3		0	30			3

Great Lakes Environmental Center, Inc.
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Project
GLEC Project Number: 2290-04

Site ID	nple Collection D	t Num	GLECNo	Sample ID	TaxaName	Total Count	Expr1009	Expr1010	Phylum	Class
SS 1002-BCA		0	10229		Ablabesmyia	2	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Bezzia/Palpomyia	1	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Caecidotea	8	0	30	Arthropoda	Crustacea
SS 1002-BCA		0	10229		Epoicocladius	2	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Helobdella	2	0	30	Annelida	Hirudinea
SS 1002-BCA		0	10229		Hexagenia	5	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Procladius	4	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Thienemannimyia	1	0	30	Arthropoda	Insecta
SS 1002-BCA		0	10229		Tubificidae	12	0	30	Annelida	Oligochaeta
SS 1031-BCA		0	10230		Bezzia/Palpomyia	3	0	30	Arthropoda	Insecta
SS 1031-BCA		0	10230		Caecidotea	1	0	30	Arthropoda	Crustacea
SS 1031-BCA		0	10230		Helobdella	1	0	30	Annelida	Hirudinea
SS 1031-BCA		0	10230		Hexagenia	3	0	30	Arthropoda	Insecta
SS 1031-BCA		0	10230		Nemata	4	0	30	Nemata	
SS 1031-BCA		0	10230		Pisidium	5	0	30	Mollusca	Pelecypoda
SS 1032-BCA		0	10231		Ablabesmyia	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Dicrotendipes	2	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Epoicocladius	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Helobdella	1	0	30	Annelida	Hirudinea
SS 1032-BCA		0	10231		Naididae	2	0	30	Annelida	Oligochaeta
SS 1032-BCA		0	10231		Natarsia	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Nemata	4	0	30	Nemata	
SS 1032-BCA		0	10231		Phylocentropus	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Polypedilum	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Procladius	1	0	30	Arthropoda	Insecta
SS 1032-BCA		0	10231		Tubificidae	2	0	30	Annelida	Oligochaeta
SS 1021-BCA		0	10232		Coelotanypus	2	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Dicrotendipes	1	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Epoicocladius	1	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Helobdella	1	0	30	Annelida	Hirudinea
SS 1021-BCA		0	10232		Hexagenia	5	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Nemata	1	0	30	Nemata	
SS 1021-BCA		0	10232		Pentaneurini	1	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Procladius	4	0	30	Arthropoda	Insecta
SS 1021-BCA		0	10232		Tubificidae	1	0	30	Annelida	Oligochaeta

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Order	Family	Subfamily	Tribe	SpeciesName	TSN	Distinct
SS 1002-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1002-BCA	Diptera	Ceratopogonidae					TRUE
SS 1002-BCA	Isopoda	Asellidae			sp.	92686	TRUE
SS 1002-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128682	TRUE
SS 1002-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1002-BCA	Ephemeroptera	Ephemeridae			limbata	101537	TRUE
SS 1002-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1002-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1002-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1031-BCA	Diptera	Ceratopogonidae					TRUE
SS 1031-BCA	Isopoda	Asellidae			sp.	92686	TRUE
SS 1031-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1031-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1031-BCA							TRUE
SS 1031-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1032-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1032-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1032-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1032-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128682	TRUE
SS 1032-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1032-BCA	Tubificida	Naididae				68854	TRUE
SS 1032-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128070	TRUE
SS 1032-BCA							TRUE
SS 1032-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1032-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129657	TRUE
SS 1032-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1032-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1021-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1021-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1021-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1021-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128682	TRUE
SS 1021-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1021-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1021-BCA							TRUE
SS 1021-BCA	Diptera	Chironomidae	Tanypodinae			128078	TRUE
SS 1021-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1021-BCA	Tubificida	Tubificidae				68585	TRUE

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Adult	Pupae	Larvae	N/A	Nymph	GridPicked	GridPossible	SamplePortion	Field0	Field1
SS 1002-BCA			2			0	30		2	
SS 1002-BCA			1			0	30		1	
SS 1002-BCA				8		0	30			8
SS 1002-BCA			2			0	30		2	
SS 1002-BCA				2		0	30			2
SS 1002-BCA			5			0	30		5	
SS 1002-BCA			4			0	30		4	
SS 1002-BCA			1			0	30		1	
SS 1002-BCA				12		0	30			12
SS 1031-BCA			3			0	30		3	
SS 1031-BCA				1		0	30			1
SS 1031-BCA				1		0	30			1
SS 1031-BCA			3			0	30		3	
SS 1031-BCA				4		0	30			4
SS 1031-BCA				5		0	30			5
SS 1032-BCA			1			0	30		1	
SS 1032-BCA			1			0	30		1	
SS 1032-BCA			2			0	30		2	
SS 1032-BCA			1			0	30		1	
SS 1032-BCA				1		0	30			1
SS 1032-BCA				2		0	30			2
SS 1032-BCA			1			0	30		1	
SS 1032-BCA				4		0	30			4
SS 1032-BCA			1			0	30		1	
SS 1032-BCA			1			0	30		1	
SS 1032-BCA			1			0	30		1	
SS 1032-BCA				2		0	30			2
SS 1021-BCA			2			0	30		2	
SS 1021-BCA			1			0	30		1	
SS 1021-BCA			1			0	30		1	
SS 1021-BCA			1			0	30		1	
SS 1021-BCA				1		0	30			1
SS 1021-BCA			5			0	30		5	
SS 1021-BCA				1		0	30			1
SS 1021-BCA			1			0	30		1	
SS 1021-BCA			4			0	30		4	
SS 1021-BCA				1		0	30			1

Great Lakes Environmental Center, Inc.
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Project
GLEC Project Number: 2290-04

Site ID	nple Collection D	t Num	GLECNo	Sample ID	TaxaName	Total Count	Expr1009	Expr1010	Phylum	Class
SS 1042-BCA		0	10233		Caecidotea	3	0	30	Arthropoda	Crustacea
SS 1042-BCA		0	10233		Caenis	1	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Cryptochironomus	3	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Dicrotendipes	13	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Enchytraeidae	1	0	30	Annelida	Oligochaeta
SS 1042-BCA		0	10233		Epoicocladius	4	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Gammarus	21	0	30	Arthropoda	Malacostraca
SS 1042-BCA		0	10233		Helobdella	1	0	30	Annelida	Hirudinea
SS 1042-BCA		0	10233		Nemata	2	0	30	Nemata	
SS 1042-BCA		0	10233		Phylocentropus	5	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Pisidium	10	0	30	Mollusca	Pelecypoda
SS 1042-BCA		0	10233		Procladius	7	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Sialis	1	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Tanytarsus	5	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Tribelos	14	0	30	Arthropoda	Insecta
SS 1042-BCA		0	10233		Tubificidae	5	0	30	Annelida	Oligochaeta
SS 1028-BCA		0	10234		Chaoborus	1	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Chironomus	20	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Cryptochironomus	3	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Dicrotendipes	2	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Enchytraeidae	1	0	30	Annelida	Oligochaeta
SS 1028-BCA		0	10234		Gammarus	2	0	30	Arthropoda	Malacostraca
SS 1028-BCA		0	10234		Nemata	3	0	30	Nemata	
SS 1028-BCA		0	10234		Paratendipes	2	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Phylocentropus	6	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Pisidium	12	0	30	Mollusca	Pelecypoda
SS 1028-BCA		0	10234		Procladius	5	0	30	Arthropoda	Insecta
SS 1028-BCA		0	10234		Tubificidae	3	0	30	Annelida	Oligochaeta
SS 1010-BCA		0	10235		Chironomus	15	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Corbicula	1	0	30	Mollusca	Pelecypoda
SS 1010-BCA		0	10235		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Helobdella	2	0	30	Annelida	Hirudinea
SS 1010-BCA		0	10235		Hexagenia	3	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Phylocentropus	3	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Thienemannimyia	5	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Tribelos	2	0	30	Arthropoda	Insecta
SS 1010-BCA		0	10235		Tubificidae	3	0	30	Annelida	Oligochaeta

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Order	Family	Subfamily	Tribe	SpeciesName	TSN	Distinct
SS 1042-BCA	Isopoda	Asellidae			sp.	92686	TRUE
SS 1042-BCA	Ephemeroptera	Caenidae			sp.	101478	TRUE
SS 1042-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1042-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1042-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1042-BCA	Tubificida	Enchytraeidae				68510	TRUE
SS 1042-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128682	TRUE
SS 1042-BCA	Amphipoda	Gammaridae			sp.	93773	TRUE
SS 1042-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1042-BCA							TRUE
SS 1042-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1042-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1042-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1042-BCA	Megaloptera	Sialidae			sp.	115002	TRUE
SS 1042-BCA	Diptera	Chironomidae	Chironominae	Tanytarsini	sp.	129978	TRUE
SS 1042-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1042-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1028-BCA	Diptera	Chaoboridae			sp.	125904	TRUE
SS 1028-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1028-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1028-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1028-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1028-BCA	Tubificida	Enchytraeidae				68510	TRUE
SS 1028-BCA	Amphipoda	Gammaridae			sp.	93773	TRUE
SS 1028-BCA							TRUE
SS 1028-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129623	TRUE
SS 1028-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1028-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1028-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1028-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1010-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1010-BCA	Veneroida	Corbiculidae			fluminea	81385	TRUE
SS 1010-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1010-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1010-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1010-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1010-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1010-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1010-BCA	Tubificida	Tubificidae				68585	TRUE

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Adult	Pupae	Larvae	N/A	Nymph	GridPicked	GridPossible	SamplePortion	Field0	Field1
SS 1042-BCA				3		0	30			3
SS 1042-BCA			1			0	30		1	
SS 1042-BCA			1			0	30		1	
SS 1042-BCA			3			0	30		3	
SS 1042-BCA			13			0	30		13	
SS 1042-BCA				1		0	30			1
SS 1042-BCA			4			0	30		4	
SS 1042-BCA				21		0	30			21
SS 1042-BCA				1		0	30			1
SS 1042-BCA				2		0	30			2
SS 1042-BCA			5			0	30		5	
SS 1042-BCA				10		0	30			10
SS 1042-BCA			7			0	30		7	
SS 1042-BCA			1			0	30		1	
SS 1042-BCA			5			0	30		5	
SS 1042-BCA			14			0	30		14	
SS 1042-BCA				5		0	30			5
SS 1028-BCA			1			0	30		1	
SS 1028-BCA			20			0	30		20	
SS 1028-BCA			1			0	30		1	
SS 1028-BCA			3			0	30		3	
SS 1028-BCA			2			0	30		2	
SS 1028-BCA				1		0	30			1
SS 1028-BCA				2		0	30			2
SS 1028-BCA				3		0	30			3
SS 1028-BCA			2			0	30		2	
SS 1028-BCA			6			0	30		6	
SS 1028-BCA				12		0	30			12
SS 1028-BCA			5			0	30		5	
SS 1028-BCA				3		0	30			3
SS 1010-BCA			15			0	30		15	
SS 1010-BCA				1		0	30			1
SS 1010-BCA			1			0	30		1	
SS 1010-BCA				2		0	30			2
SS 1010-BCA			3			0	30		3	
SS 1010-BCA			3			0	30		3	
SS 1010-BCA			5			0	30		5	
SS 1010-BCA			2			0	30		2	
SS 1010-BCA				3		0	30			3

Great Lakes Environmental Center, Inc.
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Project
GLEC Project Number: 2290-04

Site ID	nple Collection D	t Num	GLECNo	Sample ID	TaxaName	Total Count	Expr1009	Expr1010	Phylum	Class
SS 1025-BCA		0	10236		Chaoborus	1	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Chironomus	23	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Corbicula	1	0	30	Mollusca	Pelecypoda
SS 1025-BCA		0	10236		Cryptochironomus	2	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Glyptotendipes	2	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Helobdella	1	0	30	Annelida	Hirudinea
SS 1025-BCA		0	10236		Orthocladius	1	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Paratendipes	3	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Phylocentropus	1	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Pisidium	10	0	30	Mollusca	Pelecypoda
SS 1025-BCA		0	10236		Procladius	1	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Sphaerium	1	0	30	Mollusca	Pelecypoda
SS 1025-BCA		0	10236		Thienemannimyia	3	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Tribelos	2	0	30	Arthropoda	Insecta
SS 1025-BCA		0	10236		Tubificidae	5	0	30	Annelida	Oligochaeta
SS 1026-BCA		0	10237		Ablabesmyia	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Caenis	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Chironomus	17	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Coelotanypus	2	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Cryptochironomus	4	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Dicrotendipes	4	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Glyptotendipes	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Hexagenia	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Nemata	1	0	30	Nemata	
SS 1026-BCA		0	10237		Paratendipes	2	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Phylocentropus	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Pisidium	5	0	30	Mollusca	Pelecypoda
SS 1026-BCA		0	10237		Procladius	7	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Tanytarsus	1	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Thienemannimyia	4	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Tribelos	4	0	30	Arthropoda	Insecta
SS 1026-BCA		0	10237		Tubificidae	3	0	30	Annelida	Oligochaeta
SS 1033-BCA		0	10238		Ablabesmyia	1	0	30	Arthropoda	Insecta
SS 1033-BCA		0	10238		Caenis	1	0	30	Arthropoda	Insecta
SS 1033-BCA		0	10238		Chironomus	12	0	30	Arthropoda	Insecta
SS 1033-BCA		0	10238		Nemata	3	0	30	Nemata	
SS 1033-BCA		0	10238		Tribelos	4	0	30	Arthropoda	Insecta
SS 1034-BCA		0	10239		Chaoborus	2	0	30	Arthropoda	Insecta
SS 1034-BCA		0	10239		Chironomus	6	0	30	Arthropoda	Insecta
		0	10239		Pisidium	7	0	30	Mollusca	Pelecypoda
SS 1034-BCA		0	10239		Tubificidae	2	0	30	Annelida	Oligochaeta

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Order	Family	Subfamily	Tribe	SpeciesName	TSN	Distinct
SS 1025-BCA	Diptera	Chaoboridae			sp.	125904	TRUE
SS 1025-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1025-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1025-BCA	Veneroida	Corbiculidae			fluminea	81385	TRUE
SS 1025-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1025-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129483	TRUE
SS 1025-BCA	Rhynchobdellida	Glossiphoniidae			stagnalis	69396	TRUE
SS 1025-BCA	Diptera	Chironomidae	Orthocladiinae		sp.	128874	TRUE
SS 1025-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129623	TRUE
SS 1025-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1025-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1025-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1025-BCA	Veneroida	Sphaeriidae			sp.	81391	TRUE
SS 1025-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1025-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1025-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1026-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1026-BCA	Ephemeroptera	Caenidae			sp.	101478	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1026-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129483	TRUE
SS 1026-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1026-BCA							TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129623	TRUE
SS 1026-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1026-BCA	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1026-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Tanytarsini	sp.	129978	TRUE
SS 1026-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1026-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1026-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1033-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1033-BCA	Ephemeroptera	Caenidae			sp.	101478	TRUE
SS 1033-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1033-BCA							TRUE
SS 1033-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129820	TRUE
SS 1034-BCA	Diptera	Chaoboridae			sp.	125904	TRUE
SS 1034-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
	Veneroida	Sphaeriidae			sp.	81400	TRUE
SS 1034-BCA	Tubificida	Tubificidae				68585	TRUE

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Adult	Pupae	Larvae	N/A	Nymph	GridPicked	GridPossible	SamplePortion	Field0	Field1
SS 1025-BCA			1			0	30		1	
SS 1025-BCA			23			0	30		23	
SS 1025-BCA			1			0	30		1	
SS 1025-BCA				1		0	30			1
SS 1025-BCA			2			0	30		2	
SS 1025-BCA			2			0	30		2	
SS 1025-BCA				1		0	30			1
SS 1025-BCA			1			0	30		1	
SS 1025-BCA			3			0	30		3	
SS 1025-BCA			1			0	30		1	
SS 1025-BCA				10		0	30			10
SS 1025-BCA			1			0	30		1	
SS 1025-BCA				1		0	30			1
SS 1025-BCA			3			0	30		3	
SS 1025-BCA			2			0	30		2	
SS 1025-BCA				5		0	30			5
SS 1026-BCA			1			0	30		1	
SS 1026-BCA			1			0	30		1	
SS 1026-BCA			17			0	30		17	
SS 1026-BCA			2			0	30		2	
SS 1026-BCA			4			0	30		4	
SS 1026-BCA			4			0	30		4	
SS 1026-BCA			1			0	30		1	
SS 1026-BCA			1			0	30		1	
SS 1026-BCA				1		0	30			1
SS 1026-BCA			2			0	30		2	
SS 1026-BCA			1			0	30		1	
SS 1026-BCA				5		0	30			5
SS 1026-BCA			7			0	30		7	
SS 1026-BCA			1			0	30		1	
SS 1026-BCA			4			0	30		4	
SS 1026-BCA			4			0	30		4	
SS 1026-BCA				3		0	30			3
SS 1033-BCA			1			0	30		1	
SS 1033-BCA			1			0	30		1	
SS 1033-BCA			12			0	30		12	
SS 1033-BCA				3		0	30			3
SS 1033-BCA			4			0	30		4	
SS 1034-BCA			2			0	30		2	
SS 1034-BCA			6			0	30		6	
				7		0	30			7
SS 1034-BCA				2		0	30			2

Great Lakes Environmental Center, Inc.
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Project
GLEC Project Number: 2290-04

Site ID	nple Collection D	t Num	GLECNo	Sample ID	TaxaName	Total Count	Expr1009	Expr1010	Phylum	Class
SS 1022-BCA		0	10240		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1022-BCA		0	10240		Hexagenia	2	0	30	Arthropoda	Insecta
SS 1022-BCA		0	10240		Nemata	2	0	30	Nemata	
SS 1022-BCA		0	10240		Procladius	2	0	30	Arthropoda	Insecta
SS 1022-BCA		0	10240		Thienemannimyia	2	0	30	Arthropoda	Insecta
SS 1022-BCA		0	10240		Tubificidae	1	0	30	Annelida	Oligochaeta
SS 1024-BCA		0	10241		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1024-BCA		0	10241		Thienemannimyia	1	0	30	Arthropoda	Insecta
SS 1041-BCA		0	10255		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1041-BCA		0	10255		Hexagenia	4	0	30	Arthropoda	Insecta
SS 1041-BCA		0	10255		Procladius	3	0	30	Arthropoda	Insecta
SS 1012-BCA		0	10257		Chironomus	2	0	30	Arthropoda	Insecta
SS 1012-BCA		0	10257		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1012-BCA		0	10257		Hexagenia	3	0	30	Arthropoda	Insecta
SS 1012-BCA		0	10257		Procladius	5	0	30	Arthropoda	Insecta
SS 1017-BCA		0	10258		Chironomus	2	0	30	Arthropoda	Insecta
SS 1017-BCA		0	10258		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1017-BCA		0	10258		Cryptochironomus	1	0	30	Arthropoda	Insecta
SS 1017-BCA		0	10258		Hexagenia	2	0	30	Arthropoda	Insecta
SS 1017-BCA		0	10258		Procladius	2	0	30	Arthropoda	Insecta
SS 1011-BCA		0	10259		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1011-BCA		0	10259		Cryptochironomus	5	0	30	Arthropoda	Insecta
SS 1011-BCA		0	10259		Hexagenia	2	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Chaoborus	3	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Coelotanypus	1	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Cryptochironomus	2	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Dicrotendipes	1	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Enchytraeidae	1	0	30	Annelida	Oligochaeta
SS 1009-BCA		0	10260		Paratendipes	2	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Phylocentropus	3	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Procladius	4	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Tanytarsus	1	0	30	Arthropoda	Insecta
SS 1009-BCA		0	10260		Tubificidae	1	0	30	Annelida	Oligochaeta
SS 1005-BCA		0	10261		Ablabesmyia	2	0	30	Arthropoda	Insecta
SS 1005-BCA		0	10261		Dicrotendipes	1	0	30	Arthropoda	Insecta
SS 1005-BCA		0	10261		Hexagenia	3	0	30	Arthropoda	Insecta
SS 1005-BCA		0	10261		Phylocentropus	1	0	30	Arthropoda	Insecta
SS 1005-BCA		0	10261		Procladius	1	0	30	Arthropoda	Insecta
SS 1005-BCA		0	10261		Tubificidae	1	0	30	Annelida	Oligochaeta

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Order	Family	Subfamily	Tribe	SpeciesName	TSN	Distinct
SS 1022-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1022-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1022-BCA							TRUE
SS 1022-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1022-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1022-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1024-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1024-BCA	Diptera	Chironomidae	Tanypodinae		gr.	128236	TRUE
SS 1041-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1041-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1041-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1012-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1012-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1012-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1012-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1017-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129254	TRUE
SS 1017-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1017-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1017-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1017-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1011-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1011-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1011-BCA	Ephemeroptera	Ephemeridae			limbata	101537	TRUE
SS 1009-BCA	Diptera	Chaoboridae			sp.	125904	TRUE
SS 1009-BCA	Diptera	Chironomidae	Tanypodinae		sp.	128010	TRUE
SS 1009-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129368	TRUE
SS 1009-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1009-BCA	Tubificida	Enchytraeidae				68510	TRUE
SS 1009-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129623	TRUE
SS 1009-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1009-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1009-BCA	Diptera	Chironomidae	Chironominae	Tanytarsini	sp.	129978	TRUE
SS 1009-BCA	Tubificida	Tubificidae				68585	TRUE
SS 1005-BCA	Diptera	Chironomidae	Tanypodinae	Pentanerini	sp.	128079	TRUE
SS 1005-BCA	Diptera	Chironomidae	Chironominae	Chironomini	sp.	129428	TRUE
SS 1005-BCA	Ephemeroptera	Ephemeridae			sp.	101537	TRUE
SS 1005-BCA	Trichoptera	Dipseudopsidae			sp.	115361	TRUE
SS 1005-BCA	Diptera	Chironomidae	Tanypodinae		(Holotanypus) sp.	128277	TRUE
SS 1005-BCA	Tubificida	Tubificidae				68585	TRUE

Great Lakes Environmental Center,
Macroinvertebrate Analysis
StanTech: St. Louis river; 40th Ave. Pr
GLEC Project Number: 2290-04

Site ID	Adult	Pupae	Larvae	N/A	Nymph	GridPicked	GridPossible	SamplePortion	Field0	Field1
SS 1022-BCA			1			0	30		1	
SS 1022-BCA			2			0	30		2	
SS 1022-BCA			2			0	30		2	
SS 1022-BCA			2			0	30		2	
SS 1022-BCA			2			0	30		2	
SS 1022-BCA				1		0	30			1
SS 1024-BCA			1			0	30		1	
SS 1024-BCA			1			0	30		1	
SS 1041-BCA			1			0	30		1	
SS 1041-BCA			3			0	30		3	
SS 1041-BCA			3			0	30		3	
SS 1012-BCA			2			0	30		2	
SS 1012-BCA			1			0	30		1	
SS 1012-BCA			3			0	30		3	
SS 1012-BCA			5			0	30		5	
SS 1017-BCA			2			0	30		2	
SS 1017-BCA			1			0	30		1	
SS 1017-BCA			1			0	30		1	
SS 1017-BCA			2			0	30		2	
SS 1017-BCA			2			0	30		2	
SS 1011-BCA			1			0	30		1	
SS 1011-BCA			5			0	30		5	
SS 1011-BCA			2			0	30		2	
SS 1009-BCA			3			0	30		3	
SS 1009-BCA			1			0	30		1	
SS 1009-BCA			2			0	30		2	
SS 1009-BCA			1			0	30		1	
SS 1009-BCA				1		0	30			1
SS 1009-BCA			2			0	30		2	
SS 1009-BCA			3			0	30		3	
SS 1009-BCA			4			0	30		4	
SS 1009-BCA			1			0	30		1	
SS 1009-BCA				1		0	30			1
SS 1005-BCA			2			0	30		2	
SS 1005-BCA			1			0	30		1	
SS 1005-BCA			3			0	30		3	
SS 1005-BCA			1			0	30		1	
SS 1005-BCA			1			0	30		1	
SS 1005-BCA				1		0	30			1

Great Lakes Environmental Center, Inc. (GLEC)
StanTech; St. Louis River: 40th Ave. Sediment Quality Assessment
GLEC project Number: 2290-04
Macroinvertebrate Metric Analysis

ProjectID	Site ID	GLEC Number	Abundance	Richness	Shannons
StanTech-2014	SS 1029-BCA	10227	115	21	2.343
StanTech-2014	SS 1001-BCA	10228	40	12	2.144
StanTech-2014	SS 1002-BCA	10229	37	9	1.876
StanTech-2014	SS 1031-BCA	10230	17	6	1.646
StanTech-2014	SS 1032-BCA	10231	9	12	2.351
StanTech-2014	SS 1021-BCA	10232	18	10	2.058
StanTech-2014	SS 1042-BCA	10233	97	17	2.425
StanTech-2014	SS 1028-BCA	10234	61	13	2.101
StanTech-2014	SS 1010-BCA	10235	35	9	1.803
StanTech-2014	SS 1025-BCA	10236	58	16	2.096
StanTech-2014	SS 1026-BCA	10237	59	17	2.415
StanTech-2014	SS 1033-BCA	10238	21	5	1.204
StanTech-2014	SS 1034-BCA	10239	17	4	1.236
StanTech-2014	SS 1022-BCA	10240	10	6	1.748
StanTech-2014	SS 1024-BCA	10241	2	2	0.693
StanTech-2014	SS 1041-BCA	10255	8	3	0.974
StanTech-2014	SS 1012-BCA	10257	11	4	1.241
StanTech-2014	SS 1017-BCA	10258	8	5	1.560
StanTech-2014	SS 1011-BCA	10259	8	3	0.900
StanTech-2014	SS 1009-BCA	10260	19	10	2.160
StanTech-2014	SS 1005-BCA	10261	9	6	1.677

Great Lakes Environmental
StanTech; St. Louis River: 4
GLEC project Number:
Macroinvertebrate Metric

ProjectID	Simpson's	EPT Index	Hilsenhoff Index	% Dominant	Scrapers/Filterers	Shredders/Total
StanTech-2014	6.206	0.615	5.586	34.78%	0.2	0
StanTech-2014	5.926	0.095	5.853	35.00%	0	0
StanTech-2014	5.205	0.556	3.914	32.43%	0	0
StanTech-2014	4.738	0.000	6.747	29.41%	0	0
StanTech-2014	9.000	0.125	5.367	44.44%	2	0
StanTech-2014	6.231	0.500	5.839	27.78%	0	0
StanTech-2014	8.769	0.128	5.478	21.65%	0.05	0
StanTech-2014	5.751	0.182	6.639	32.79%	0.055555556	0
StanTech-2014	4.268	0.261	6.163	42.86%	0	0
StanTech-2014	4.861	0.026	6.672	39.66%	0	0
StanTech-2014	7.718	0.064	6.402	28.81%	0	0
StanTech-2014	2.579	0.059	6.948	57.14%	0	0
StanTech-2014	3.108	0.000	7.082	41.18%	0	0
StanTech-2014	5.556	0.400	5.240	20.00%	0	0
StanTech-2014	2.000	0.000	6.600	50.00%	0	0
StanTech-2014	2.462	1.000	5.963	50.00%	0	0
StanTech-2014	3.103	0.375	6.473	45.45%	0	0
StanTech-2014	4.571	0.333	6.825	25.00%	0	0
StanTech-2014	2.133	0.333	5.875	62.50%	0	0
StanTech-2014	7.681	0.273	5.568	21.05%	0.25	0
StanTech-2014	4.765	1.000	4.900	33.33%	0	0

Great Lakes Environmental
StanTech; St. Louis River: 4
GLEC project Number:
Macroinvertebrate Metric

ProjectID	Similiarity Coefficent:Control Site 1031	Similarity Cofficent: Control Site 1041
StanTech-2014	0.296	0.250
StanTech-2014	0.444	0.400
StanTech-2014	0.533	0.333
StanTech-2014	1.000	0.222
StanTech-2014	0.222	0.267
StanTech-2014	0.375	0.462
StanTech-2014	0.348	0.200
StanTech-2014	0.211	0.250
StanTech-2014	0.267	0.333
StanTech-2014	0.182	0.211
StanTech-2014	0.261	0.300
StanTech-2014	0.182	0.000
StanTech-2014	0.200	0.000
StanTech-2014	0.333	0.667
StanTech-2014	0.000	0.000
StanTech-2014	0.222	1.000
StanTech-2014	0.200	0.857
StanTech-2014	0.182	0.750
StanTech-2014	0.222	0.667
StanTech-2014	0.000	0.308
StanTech-2014	0.167	0.444

Appendix I
Sediment Chemical Analysis

- Chain of Custody
- Analytical Results

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	Regulatory Program:

FILTERED? (YES/NO) Y/N
PRESERVATION (CODE)* A

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SL = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

Analyses Requested: Pb, Lead

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	# of jars	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	SS 1022-AT (15 cm)	9/16/14	0900	S	3 2 New 10/2/14	collected in lab: 10/2/14		
	SS 1024-AT (15 cm)	9/16/14	1045	S	3 2			
	SS 1032-AT (15 cm)	9/15/14	1545	S	3 2			
	SS 1021-AT (15 cm)	9/15/14	1810	S	3 2			
	SS 1026-AT (15 cm)	9/16/14	1445	S	3 2			
	SS 1028-AT (15 cm)	9/16/14	1530	S	3 2			
	SS 1025-AT (15 cm)	9/16/14	1150	S	3 2			
	SS 1010-AT (15 cm)	9/17/14	1105	S	3 2			
	SS 1029-AT (15 cm)	9/17/14	0840	S	3 2			
	SS 1001-AT (15 cm)	9/17/14	1200	S	3 2			
	SS 1042-AT (15 cm)	9/17/14	0940	S	3 2			
	SS 1009-AT (15 cm)	9/18/14	1500	S	3 2			
	SS 1017-AT (15 cm)	9/18/14	1400	S	3 2	collected in lab: 10/2/14		

See Run #3 for 105

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Jonathan W Zaur	10/2/14 1500		

PACE Project No.

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	
Regulatory Program:	

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO): Y/N
PRESERVATION (CODE)*: A
Analyses Requested: Flat Letter
# of jars

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	# of jars	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	SS 1011-AT (15 CM)	9/18/14	1440	S	32	collected in lab: 10/2/14		
	SS 1031-AT (15 CM)	9/18/14	1020	S	32			
	SS 1033-AT (15 CM)	9/18/14	0855	S	32			
	SS 1034-AT (15 CM)	9/18/14	0940	S	32			
	SS 1002-AT (15 CM)	9/18/14	1615	S	32			
	SS 1005-AT (15 CM)	9/18/14	1535	S	32			
	SS 1041-AT (15 CM)	9/19/14	0840	S	32			
	SS 1012-AT (15 CM)	9/19/14	1145	S	32	collected in lab: 10/2/14		
					10/2/14			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Malia a Hart	10/2/14 1500		

PACE Project No.

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

Ref: 2290-00.stantec Date: 020ct14 SHIPPING: 47.6
Dep: Wgt: 50.00 LBS SPECIAL: 0.0
HANDLING: 0.0
DV: 0.00 TOTAL: 47.6

Ref: 2290-00.stantec Date: 020ct14 SHIPPING: 60.28
Dep: Wgt: 65.00 LBS SPECIAL: 0.00
HANDLING: 0.00
DV: 0.00 TOTAL: 60.28

Svcs: PRIORITY OVERNIGHT
TRCK: 9802 5316 0709

Svcs: PRIORITY OVERNIGHT
TRCK: 9802 5316 0710

Pace Analytical

BOTTLE ORDER # 35165

9/8/2014 2:28:45 PM

1241 Bellevue Street
Suite 9
Green Bay, WI 54302
(920) 469-2436

Contact:	McCAULEY, DENNIS	*Ship To:*		*Return To:*	
Company:	GLEC	*Contact:*	PONTIER, MATTHEW	*Contact:*	
Address:	739 Hastings Street	*Company:*	STANTEC	*Lab Name:*	PACE - GB
		Address:	2335 HIGHWAY 36	*Address:*	1241 Bellevue Street
					Suite 9
City, St, Zip:	Traverse City ,MI ,49686	*City, St, Zip:*	WEST ST. PAUL , MN,55113	*City, St, Zip:*	Green Bay ,WI ,54302
Phone:	(231) 941-2230 *Ext.*	*Phone:*	(651) 226-6465 *Ext.*	*Phone:*	(920) 469-2436 *Ext.*
Initiator:	Tod Noltemeyer *PM:* TN				

Proj. Description: Biota & Sediment *Quote Number:* *Profile Number:*

Needs Bottles by: 09/11/201 - *Expected Date Ret:* *Shipping Method:* Most Economical

Return Shipping Labels
- ☐ *No Shipper #*
- ☐ *With Shipper #*

COC's
- ☑ *Blank #* 4
- ☐ *Preprinted*

Bottle Labels
- ☑ *Blank*
- ☐ *Pre-Printed - With Sample IDs*
- ☐ *Pre-Printed - No Sample IDs*

Bottles
- ☐ *Boxed Cases*
- ☐ *Individually Wrapped*
- ☐ *Grouped By Sample ID / Matrix*

Misc
- ☐ *Sampling Instructions*
- ☑ *Custody Seal*
- ☑ *Temp. Blanks*
- ☑ *Coolers:*
- ☐ *Extra Bubble Wrap*
- ☐ *10 mL Cut-Off Syringes*
- ☐ *Short Hold / Rush Stickers*
- ☐ *DI Water* 0 *Liter(s)*

Trip Blank ☐

Qty	Total	Matrix	Method	BottleType	LotNumber	Note
50	50	Biota	50 gallon size ziplock baggies for fish	50 ziplocks		
1	1	Biota	1 extra empty cooler for fish	1 extra empty cooler for fish		
25	25	~~Soil~~ Tissue	PAHs, PCBs, Metals, TOC, Moisture Tissue	4oz. AG WM unpres.	G-4-205-02DB	
25	25	~~Soil~~ Tissue	Ignore Dioxins	4oz. AG WM unpres.	G-4-205-02DB	
25	25	Soil	Grain Size	9 oz clear or amber jars	F-3-339-02AB	

Soil: Grain Size / TOC

Use 4oz for TOC

Notes: Label Cooler: "ATTN: Matthew Pontier

Hazard Shipping Placard In Place : NA

Shipped Date: 9/9/2014
Shipped By: Mai Yer Her
Verified By:

*Sample receiving hours are Monday through Friday 8:00 am to 6:00 pm and Saturday from 9:00 am to 12:00 pm unless special arrangements are made with you project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 21, 2014

Dennis McCauley
Great Lakes Environmental Center, Inc.
739 Hastings Street
Traverse City, MI 49686

RE: Project: 2290-00 STANTEC
Pace Project No.: 40104743

Dear Dennis McCauley:
Enclosed are the analytical results for sample(s) received by the laboratory on October 03, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
tod.noltemeyer@pacelabs.com
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012
Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40104743001	**SS 1022-AT (15 CM)**	Solid	09/16/14 09:00	10/03/14 11:25
40104743002	**SS 1024-AT (15 CM)**	Solid	09/16/14 10:45	10/03/14 11:25
40104743003	**SS 1032-AT (15 CM)**	Solid	09/15/14 15:45	10/03/14 11:25
40104743004	**SS 1021-AT (15 CM)**	Solid	09/15/14 18:10	10/03/14 11:25
40104743005	**SS 1026-AT (15 CM)**	Solid	09/16/14 14:45	10/03/14 11:25
40104743006	**SS 1028-AT (15 CM)**	Solid	09/16/14 15:30	10/03/14 11:25
40104743007	**SS 1025-AT (15 CM)**	Solid	09/16/14 11:50	10/03/14 11:25
40104743008	**SS 1010-AT (15 CM)**	Solid	09/17/14 11:05	10/03/14 11:25
40104743009	**SS 1029-AT (15 CM)**	Solid	09/17/14 08:40	10/03/14 11:25
40104743010	**SS 1001-AT (15 CM)**	Solid	09/17/14 12:00	10/03/14 11:25
40104743011	**SS 1042-AT (15 CM)**	Solid	09/17/14 09:40	10/03/14 11:25
40104743012	**SS 1009-AT (15 CM)**	Solid	09/18/14 15:00	10/03/14 11:25
40104743013	**SS 1017-AT (15 CM)**	Solid	09/18/14 14:00	10/03/14 11:25
40104743014	**SS 1011-AT (15 CM)**	Solid	09/18/14 14:40	10/03/14 11:25
40104743015	**SS 1031-AT (15 CM)**	Solid	09/18/14 10:20	10/03/14 11:25
40104743016	**SS 1033-AT (15 CM)**	Solid	09/18/14 08:55	10/03/14 11:25
40104743017	**SS 1034-AT (15 CM)**	Solid	09/18/14 09:40	10/03/14 11:25
40104743018	**SS 1002-AT (15 CM)**	Solid	09/18/14 16:15	10/03/14 11:25
40104743019	**SS 1005-AT (15 CM)**	Solid	09/18/14 15:35	10/03/14 11:25
40104743020	**SS 1041-AT (15 CM)**	Solid	09/19/14 08:40	10/03/14 11:25
40104743021	**SS 1012-AT (15 CM)**	Solid	09/19/14 11:45	10/03/14 11:25

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40104743001	**SS 1022-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743002	**SS 1024-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743003	**SS 1032-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743004	**SS 1021-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743005	**SS 1026-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743006	**SS 1028-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743007	**SS 1025-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743008	**SS 1010-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743009	**SS 1029-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743010	**SS 1001-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743011	**SS 1042-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743012	**SS 1009-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743013	**SS 1017-AT (15 CM)**	ASA 15-5 mod	WT1	4	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743014	**SS 1011-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743015	**SS 1031-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743016	**SS 1033-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743017	**SS 1034-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743018	**SS 1002-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743019	**SS 1005-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743020	**SS 1041-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743021	**SS 1012-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Method: **ASA 15-5 mod**
Description: PSA Percent Sand,Silt,Clay
Client: Great Lakes Environmental Center
Date: October 21, 2014

General Information:
21 samples were analyzed for ASA 15-5 mod. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Method: **Walkley Black**
Description: Organic Carbon Walkley Black
Client: Great Lakes Environmental Center
Date: October 21, 2014

General Information:
21 samples were analyzed for Walkley Black. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with Walkley Black with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1022-AT (15 CM) **Lab ID: 40104743001** Collected: 09/16/14 09:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:14		
Percent Sand	**25.0**	% (w/w)	0.10		1		10/14/14 16:14		
Percent Silt	**55.0**	% (w/w)	0.10		1		10/14/14 16:14		
Texture	**silt loam**				1		10/14/14 16:14		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**54.7**	%	0.10	0.10	1		10/07/14 14:24		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**100000**	mg/kg	3230	749	1	10/10/14 08:29	10/10/14 12:46	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1024-AT (15 CM) **Lab ID: 40104743002** Collected: 09/16/14 10:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:17		
Percent Sand	**20.0**	% (w/w)	0.10		1		10/14/14 16:17		
Percent Silt	**60.0**	% (w/w)	0.10		1		10/14/14 16:17		
Texture	**silt loam**				1		10/14/14 16:17		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**51.2**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**31700**	mg/kg	2020	469	1	10/10/14 08:29	10/10/14 12:46	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1032-AT (15 CM) **Lab ID: 40104743003** Collected: 09/15/14 15:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:23		
Percent Sand	**47.5**	% (w/w)	0.10		1		10/14/14 16:23		
Percent Silt	**40.0**	% (w/w)	0.10		1		10/14/14 16:23		
Texture	**loam**				1		10/14/14 16:23		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**49.1**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**37700**	mg/kg	2940	683	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1021-AT (15 CM) **Lab ID: 40104743004** Collected: 09/15/14 18:10 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:26		
Percent Sand	**45.0**	% (w/w)	0.10		1		10/14/14 16:26		
Percent Silt	**42.5**	% (w/w)	0.10		1		10/14/14 16:26		
Texture	**loam**				1		10/14/14 16:26		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**46.2**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**44100**	mg/kg	2410	560	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1026-AT (15 CM) **Lab ID: 40104743005** Collected: 09/16/14 14:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:30		
Percent Sand	**37.5**	% (w/w)	0.10		1		10/14/14 16:30		
Percent Silt	**50.0**	% (w/w)	0.10		1		10/14/14 16:30		
Texture	**silt loam**				1		10/14/14 16:30		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**60.7**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**102000**	mg/kg	1770	411	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1028-AT (15 CM) **Lab ID: 40104743006** Collected: 09/16/14 15:30 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**7.5**	% (w/w)	0.10		1		10/14/14 16:33		
Percent Sand	**72.5**	% (w/w)	0.10		1		10/14/14 16:33		
Percent Silt	**20.0**	% (w/w)	0.10		1		10/14/14 16:33		
Texture	**sandy loam**				1		10/14/14 16:33		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**52.7**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**134000**	mg/kg	2200	511	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1025-AT (15 CM) **Lab ID: 40104743007** Collected: 09/16/14 11:50 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**22.5**	% (w/w)	0.10		1		10/14/14 16:38		
Percent Sand	**17.5**	% (w/w)	0.10		1		10/14/14 16:38		
Percent Silt	**60.0**	% (w/w)	0.10		1		10/14/14 16:38		
Texture	**silt loam**				1		10/14/14 16:38		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**70.9**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**92900**	mg/kg	1690	394	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1010-AT (15 CM) **Lab ID: 40104743008** Collected: 09/17/14 11:05 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:41		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 16:41		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 16:41		
Texture	**silt loam**				1		10/14/14 16:41		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.3**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**45700**	mg/kg	2500	581	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1029-AT (15 CM) **Lab ID: 40104743009** Collected: 09/17/14 08:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**5.0**	% (w/w)	0.10		1		10/14/14 16:44		
Percent Sand	**80.0**	% (w/w)	0.10		1		10/14/14 16:44		
Percent Silt	**15.0**	% (w/w)	0.10		1		10/14/14 16:44		
Texture	**loamy sand**				1		10/14/14 16:44		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**30.5**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**38000**	mg/kg	1550	360	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1001-AT (15 CM) **Lab ID: 40104743010** Collected: 09/17/14 12:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:47		
Percent Sand	**27.5**	% (w/w)	0.10		1		10/14/14 16:47		
Percent Silt	**52.5**	% (w/w)	0.10		1		10/14/14 16:47		
Texture	**silt loam**				1		10/14/14 16:47		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.8**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**52700**	mg/kg	2560	596	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1042-AT (15 CM) **Lab ID: 40104743011** Collected: 09/17/14 09:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**7.5**	% (w/w)	0.10		1		10/14/14 16:50		
Percent Sand	**75.0**	% (w/w)	0.10		1		10/14/14 16:50		
Percent Silt	**17.5**	% (w/w)	0.10		1		10/14/14 16:50		
Texture	**sandy loam**				1		10/14/14 16:50		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**34.4**	%	0.10	0.10	1		10/10/14 09:52		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**30200**	mg/kg	2740	636	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1009-AT (15 CM) **Lab ID: 40104743012** Collected: 09/18/14 15:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**15.0**	% (w/w)	0.10		1		10/14/14 16:54		
Percent Sand	**52.5**	% (w/w)	0.10		1		10/14/14 16:54		
Percent Silt	**32.5**	% (w/w)	0.10		1		10/14/14 16:54		
Texture	**sandy loam**				1		10/14/14 16:54		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**50.8**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**60400**	mg/kg	3640	845	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1017-AT (15 CM) **Lab ID: 40104743013** Collected: 09/18/14 14:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**17.5**	% (w/w)	0.10		1		10/14/14 16:57		
Percent Sand	**30.0**	% (w/w)	0.10		1		10/14/14 16:57		
Percent Silt	**52.5**	% (w/w)	0.10		1		10/14/14 16:57		
Texture	**silt loam**				1		10/14/14 16:57		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.0**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**82900**	mg/kg	3450	801	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1011-AT (15 CM) **Lab ID: 40104743014** Collected: 09/18/14 14:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**17.5**	% (w/w)	0.10		1		10/14/14 17:00		
Percent Sand	**60.0**	% (w/w)	0.10		1		10/14/14 17:00		
Percent Silt	**22.5**	% (w/w)	0.10		1		10/14/14 17:00		
Texture	**sandy loam**				1		10/14/14 17:00		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**51.2**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**46500**	mg/kg	2150	500	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1031-AT (15 CM) **Lab ID: 40104743015** Collected: 09/18/14 10:20 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**22.5**	% (w/w)	0.10		1		10/14/14 17:07		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 17:07		
Percent Silt	**55.0**	% (w/w)	0.10		1		10/14/14 17:07		
Texture	**silt loam**				1		10/14/14 17:07		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**57.1**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**40300**	mg/kg	3330	774	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1033-AT (15 CM) **Lab ID: 40104743016** Collected: 09/18/14 08:55 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**27.5**	% (w/w)	0.10		1		10/14/14 17:09		
Percent Sand	**10.0**	% (w/w)	0.10		1		10/14/14 17:09		
Percent Silt	**62.5**	% (w/w)	0.10		1		10/14/14 17:09		
Texture	**silty clay loam**				1		10/14/14 17:09		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**71.6**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**95000**	mg/kg	3510	815	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1034-AT (15 CM) **Lab ID: 40104743017** Collected: 09/18/14 09:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**32.5**	% (w/w)	0.10		1		10/14/14 17:12		
Percent Sand	**10.0**	% (w/w)	0.10		1		10/14/14 17:12		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 17:12		
Texture	**silty clay loam**				1		10/14/14 17:12		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**70.8**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**55300**	mg/kg	2630	611	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1002-AT (15 CM) **Lab ID: 40104743018** Collected: 09/18/14 16:15 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**27.5**	% (w/w)	0.10		1		10/14/14 17:15		
Percent Sand	**15.0**	% (w/w)	0.10		1		10/14/14 17:15		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 17:15		
Texture	**silty clay loam**				1		10/14/14 17:15		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**66.3**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**75400**	mg/kg	2990	693	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1005-AT (15 CM) **Lab ID: 40104743019** Collected: 09/18/14 15:35 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 17:27		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 17:27		
Percent Silt	**57..5**	% (w/w)	0.10		1		10/14/14 17:27		
Texture	**silt loam**				1		10/14/14 17:27		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**56.4**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**97700**	mg/kg	2700	628	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1041-AT (15 CM) **Lab ID: 40104743020** Collected: 09/19/14 08:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**2.5**	% (w/w)	0.10		1		10/14/14 17:30		
Percent Sand	**92.5**	% (w/w)	0.10		1		10/14/14 17:30		
Percent Silt	**5.0**	% (w/w)	0.10		1		10/14/14 17:30		
Texture	**sand**				1		10/14/14 17:30		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.0**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**2710**	mg/kg	563	131	1	10/10/14 08:29	10/10/14 12:49	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1012-AT (15 CM) **Lab ID: 40104743021** Collected: 09/19/14 11:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 17:39		
Percent Sand	**57.5**	% (w/w)	0.10		1		10/14/14 17:39		
Percent Silt	**30.0**	% (w/w)	0.10		1		10/14/14 17:39		
Texture	**sandy loam**				1		10/14/14 17:39		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**41.8**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**35500**	mg/kg	3920	911	1	10/13/14 11:23	10/13/14 14:28	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10411 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010

SAMPLE DUPLICATE: 1059660

Parameter	Units	40104757003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.0	4.1	3	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10445
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40104743011

SAMPLE DUPLICATE: 1061555

Parameter	Units	40104676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.2	17.3	7	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10446 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020, 40104743021

SAMPLE DUPLICATE: 1061632

Parameter	Units	40105014003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.1	15.9	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: WETA/25507 Analysis Method: Walkley Black
QC Batch Method: Walkley Black Analysis Description: Organic Carbon
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010, 40104743011, 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020

METHOD BLANK: 1060303 Matrix: Solid
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010, 40104743011, 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/kg	<92.9	400	10/10/14 12:46	

LABORATORY CONTROL SAMPLE: 1060304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/kg	16000	16000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1060305 1060306

Parameter	Units	40104743001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	100000	129000	129000	228000	223000	99	95	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1060307 1060308

Parameter	Units	40104743002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	31700	80800	80800	110000	112000	97	99	80-120	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: WETA/25564
QC Batch Method: Walkley Black
Analysis Method: Walkley Black
Analysis Description: Organic Carbon
Associated Lab Samples: 40104743021

METHOD BLANK: 1062646
Matrix: Solid
Associated Lab Samples: 40104743021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/kg	<92.9	400	10/13/14 14:28	

LABORATORY CONTROL SAMPLE: 1062647

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/kg	16000	15700	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1062648 1062649

Parameter	Units	40104743021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	35500	157000	157000	196000	197000	102	103	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1062650 1062651

Parameter	Units	50104645001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	19100	154000	154000	171000	174000	98	101	80-120	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

BATCH QUALIFIERS

Batch: WETA/25552

[WB] Results reported on dry weight basis per cited method.

Batch: WETA/25580

[WB] Results reported on dry weight basis per cited method.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40104743001	**SS 1022-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743002	**SS 1024-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743003	**SS 1032-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743004	**SS 1021-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743005	**SS 1026-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743006	**SS 1028-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743007	**SS 1025-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743008	**SS 1010-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743009	**SS 1029-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743010	**SS 1001-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743011	**SS 1042-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743012	**SS 1009-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743013	**SS 1017-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743014	**SS 1011-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743015	**SS 1031-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743016	**SS 1033-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743017	**SS 1034-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743018	**SS 1002-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743019	**SS 1005-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743020	**SS 1041-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743021	**SS 1012-AT (15 CM)**	ASA 15-5 mod	MT/17162		
40104743001	**SS 1022-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743002	**SS 1024-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743003	**SS 1032-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743004	**SS 1021-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743005	**SS 1026-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743006	**SS 1028-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743007	**SS 1025-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743008	**SS 1010-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743009	**SS 1029-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743010	**SS 1001-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743011	**SS 1042-AT (15 CM)**	ASTM D2974-87	PMST/10445		
40104743012	**SS 1009-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743013	**SS 1017-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743014	**SS 1011-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743015	**SS 1031-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743016	**SS 1033-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743017	**SS 1034-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743018	**SS 1002-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743019	**SS 1005-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743020	**SS 1041-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743021	**SS 1012-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743001	**SS 1022-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743002	**SS 1024-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743003	**SS 1032-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743004	**SS 1021-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40104743005	**SS 1026-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743006	**SS 1028-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743007	**SS 1025-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743008	**SS 1010-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743009	**SS 1029-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743010	**SS 1001-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743011	**SS 1042-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743012	**SS 1009-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743013	**SS 1017-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743014	**SS 1011-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743015	**SS 1031-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743016	**SS 1033-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743017	**SS 1034-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743018	**SS 1002-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743019	**SS 1005-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743020	**SS 1041-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743021	**SS 1012-AT (15 CM)**	Walkley Black	WETA/25564	Walkley Black	WETA/25580

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Page 1 of 40104743

Bottle Order # 35165

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

RAS

CHAIN OF CUSTODY

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	Regulatory Program:

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO): NO
PRESERVATION (CODE)*: A

Analyses Requested: # of jars

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	# of jars	Y/N	Pick Letter	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
01	SS 1022-AT (15 CM)	9/16/14	0900	S	3 2		2-4oz Ag A	collected in lab: 10/2/14	1-8oz Ag A	
02	SS 1024-AT (15 CM)	9/16/14	1045	S	3 2					
03	SS 1032-AT (15 CM)	9/15/14	1545	S	3 2					
04	SS 1021-AT (15 CM)	9/15/14	1810	S	3 2					
05	SS 1026-AT (15 CM)	9/16/14	1445	S	3 2					
06	SS 1028-AT (15 CM)	9/16/14	1530	S	3 2					
07	SS 1025-AT (15 CM)	9/16/14	1150	S	3 2					
08	SS 1010-AT (15 CM)	9/17/14	1105	S	3 2					
09	SS 1029-AT (15 CM)	9/17/14	0840	S	3 2					
10	SS 1001-AT (15 CM)	9/17/14	1200	S	3 2		1-4oz Ag A			
11	SS 1042-AT (15 CM)	9/17/14	0940	S	3 2					
12	SS 1009-AT (15 CM)	9/18/14	1500	S	3 2					
13	SS 1017-AT (15 CM)	9/18/14	1400	S	3 2			collected in lab: 10/2/14		

See bottle order # 35165

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mailee Wilbert	10/3/14 1500		
Fed Ex	10/3/14 1125	Skull	10/3/14 1125

PACE Project No. 40104743

Receipt Temp = 0.2 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal: Present / Not Present; Intact / Not Intact

Version 6.0 08/14/06

C019a(27Jun2006)

ORIGINAL

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	Regulatory Program:

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

40104743

Bottle Order # 35165

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) Y/N
PRESERVATION (CODE)* A
Pick Letter
Analyses Requested: See bottle order # 35165
# of jars

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	# of jars	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
014	SS 1011-AT (15 CM)	9/18/14	1440	S	32	collected in lab: 10/2/14	1-4oz Ag A	
015	SS 1031-AT (15 CM)	9/18/14	1020	S	32			
016	SS 1033-AT (15 CM)	9/18/14	0855	S	32			
017	SS 1034-AT (15 CM)	9/18/14	0940	S	32			
018	SS 1002-AT (15 CM)	9/18/14	1615	S	32			
019	SS 1005-AT (15 CM)	9/18/14	1535	S	32			
020	SS 1041-AT (15 CM)	9/19/14	0840	S	32			
021	SS 1012-AT (15 CM)	9/19/14	1145	S	32	collected in lab: 10/2/14		
					1 tub 10/2/14			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Matthew W Larson	10/2/14 1500		
Fed Ex	10/3/14 1125	S Bell	10/3/14 1125

PACE Project No. 40104743

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Jacki Johnson - Fwd: Stantec Shipment of Sediment Samples

40104743

From: Tod Noltemeyer
To: WI Sample Receiving
Date: 10/2/2014 2:54 PM
Subject: Fwd: Stantec Shipment of Sediment Samples
CC: Johnson, Jacki; Suchyta, Kimberly
Attachments: pace stantec coc_TOC and Grain Size.pdf

GLEC samples arriving in GB tomorrow.

Project Manager
Pace Analytical - WI
(608) 232-3300

Tod.Noltemeyer@pacelabs.com

>>> Dennis McCauley <dmccauley@glec.com> 10/2/2014 1:52 PM >>>
Hello Tod: Great lakes Environemntal Center, Inc. (GLEC) shipped two coolers today via FEDX to Pace containing sediment samples for the analysis of TOC and grain size. FEDX tracking numbers 9802 5316 0709 and 9802 5316 0710. The scanned COCs are also attached with this message. If you have any questions or require additional information, please contact either Mailee Garton at mgarton@glec.com or myself. Thanks, Dennis

--
Dennis J. McCauley
President/Principal Research Scientist
Great Lakes Environmental Center, Inc.
Phone: 231/941-2230
Cell: 231/649-3740
FAX: 231/941-2240
www.glec.com

This e-mail message and all attachments transmitted with it are for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit http://www.symanteccloud.com

---

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical™

Project #: WO#: 40104743
40104743

Client Name: Great lakes Environmental

Courier: ☑ Fed Ex ☐ UPS ☐ Client ☐ Pace Other:

Tracking #: 9802 5316 0710

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR-44 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0.2 /Corr: 0.2 **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☑ yes ☐ no

Person examining contents:
Date: 10/3/14
Initials: SB

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. No analysis SB 10/3/14
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes ☑No	Initial when completed / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	14.
Trip Blank Present:	☐Yes ☑No ☐N/A	15.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JJ for TN **Date:** 10/6/14

F-GB-C-031-Rev.02 (28Oct2013) SCUR Form

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Tod Noltemeyer
PASI Wisconsin
1241 Bellevue Street
Suite 9
Green Bay WI 54302

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10293397
Sample Receipt Date: 01/07/2015
Client Project #: 40108983
Client Sub PO #: N/A
State Cert #: 9909

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

January 21, 2015

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
January 21, 2015

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on twenty-seven samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The first nineteen samples listed on the chain-of-custody documentation were received outside of the 30-day hold time recommended in the method. All twenty-seven samples were extracted outside the 30-day hold time, therefore, the reported values should be regarded as minimum possible concentrations.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 36-106%. Except for three low values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean oil

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 92-130% with relative percent differences of 0.0-6.1%. These results were all within the target ranges for the method. Matrix spikes were not prepared with the sample batches.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q
Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

RUSH
JP 1/7/15

Chain of Custody

Pace Analytical®
www.pacelabs.com
10293397

Workorder: 40108983 **Workorder Name:** 2290-00 STANTEC **Owner Received Date:** 12/30/2014 **Results Requested By:** 1/21/2015

Report To

Tod Noltemeyer
Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone (920)469-2436
Fax (920)469-8827

Subcontract To

Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved Plastic	Dioxin/Furans by 8290	LAB USE ONLY
1	BKGD 100814 LUMB	PS	10/8/2014 16:00	40108983001	Tissue	1	X	001
2	CONTROL 100814 LUMB	PS	11/6/2014 09:50	40108983002	Tissue	1		002
3	10207 LUMB	PS	11/6/2014 12:30	40108983003	Tissue	1		003
4	10208 LUMB	PS	11/6/2014 14:25	40108983004	Tissue	1		004
5	10209 LUMB	PS	11/6/2014 15:19	40108983005	Tissue	1		005
6	10210 LUMB	PS	11/7/2014 18:21	40108983006	Tissue	1		006
7	10212 LUMB	PS	11/7/2014 18:35	40108983007	Tissue	1		007
8	10213 LUMB	PS	11/7/2014 13:56	40108983008	Tissue	1		008
9	10214 LUMB	PS	11/7/2014 14:18	40108983009	Tissue	1		009
10	BKGD 102214 LUMB	PS	10/22/2014 15:30	40108983010	Tissue	1		010
11	CONTROL 102214 LUMB	PS	11/20/2014 08:33	40108983011	Tissue	1		011
12	10215 LUMB	PS	11/20/2014 10:35	40108983012	Tissue	1		012
13	10216 LUMB	PS	11/20/2014 16:10	40108983013	Tissue	1		013
14	10217 LUMB	PS	11/20/2014 16:10	40108983014	Tissue	1		014
15	10218 LUMB	PS	11/20/2014 16:30	40108983015	Tissue	1		015
16	10219 LUMB	PS	11/21/2014 17:20	40108983016	Tissue	1		016
17	10220 LUMB	PS	11/21/2014 10:20	40108983017	Tissue	1		017
18	10221 LUMB	PS	11/21/2014 13:40	40108983018	Tissue	1		018
19	BKGD 111214 LUMB	PS	11/12/2014 15:35	40108983019	Tissue	1		019

Chain of Custody

Pace Analytical®
www.pacelabs.com
10293397

Workorder: 40108983 **Workorder Name:** 2290-00 STANTEC **Owner Received Date:** 12/30/2014 **Results Requested By:** 1/21/2015

Report To

Tod Noltemeyer
Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone (920)469-2436
Fax (920)469-8827

Subcontract To

Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved Plastic	Requested Analysis: X Dioxin/Furans by 8290	LAB USE ONLY
20	CONTROL 111214 LUMB	PS	12/11/2014 12:00	40108983020	Tissue	1	X	020
21	10222 LUMB	PS	12/11/2014 12:05	40108983021	Tissue	1	X	021
22	10223 LUMB	PS	12/11/2014 14:00	40108983022	Tissue	1	X	022
23	10224 LUMB	PS	12/11/2014 15:40	40108983023	Tissue	1	X	023
24	10225 LUMB	PS	12/11/2014 16:05	40108983024	Tissue	1	X	024
25	10226 LUMB	PS	12/11/2014 16:30	40108983025	Tissue	1	X	025
26	10254 LUMB	PS	12/12/2014 09:00	40108983026	Tissue	1	X	026
27	10256 LUMB	PS	12/12/2014 12:30	40108983027	Tissue	1	X	027

Transfers	Released By	Date/Time	Received By	Date/Time
1	Sarah Weeyers PaceGB	1/6/15 1430	[illegible] PACE	1/7/15 10:19
2				
3				

Comments

Cooler Temperature on Receipt Dry Ice °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE WI

Project #: WO#: 10293397

10293397

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☒ Other: Waltco

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet Dry Ice ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): Dry Ice **Cooler Temp Corrected (°C):** Dry Ice **Biological Tissue Frozen?** ☒ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C **Correction Factor:** Dry Ice **Date and Initials of Person Examining Contents:** JP 1/7/15

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: TS	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 1/7/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 100814 LUMB		
Lab Sample ID	40108983001		
Filename	F150113B_06		
Injected By	CVS		
Total Amount Extracted	20.0 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	10/08/2014 16:00
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015 20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015 17:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.120	-----	0.080	J	2,3,7,8-TCDF-13C	2.00	71
Total TCDF	0.270	-----	0.080	J	2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	ND	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	89
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	0.051		1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	ND	-----	0.043		2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	-----	0.047		1,2,3,7,8,9-HxCDF-13C	2.00	68
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	-----	0.062		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.062		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	0.041		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	0.036		OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	-----	0.038				
1,2,3,7,8,9-HxCDF	ND	-----	0.044		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.040		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.046		2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	0.049				
1,2,3,7,8,9-HxCDD	ND	-----	0.043				
Total HxCDD	0.048	-----	0.046	J			
1,2,3,4,6,7,8-HpCDF	0.042	-----	0.028	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.039		Equivalence: 0.12 ng/Kg		
Total HpCDF	0.084	-----	0.033	BJ	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.071	0.047	IJ			
Total HpCDD	0.120	-----	0.047	J			
OCDF	ND	-----	0.130				
OCDD	0.320	-----	0.120	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 100814 LUMB		
Lab Sample ID	40108983002		
Filename	F150113B_07		
Injected By	CVS		
Total Amount Extracted	20.2 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/06/2014 09:50
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015 20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015 18:12

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.200	-----	0.130	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	2.100	-----	0.130		2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	89
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	0.250	-----	0.150	J	1,2,3,7,8-PeCDD-13C	2.00	102
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.078		1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	-----	0.058	0.054	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	ND	-----	0.066		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.071		1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	0.091	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	0.055		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.057		OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	-----	0.062	0.052	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.063		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.057		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.082	-----	0.069	J	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	0.086	-----	0.074	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.063				
Total HxCDD	0.260	-----	0.068	J			
1,2,3,4,6,7,8-HpCDF	-----	0.063	0.047	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.074		Equivalence: 0.18 ng/Kg		
Total HpCDF	0.074	-----	0.060	BJ	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.150	0.073	IJ			
Total HpCDD	0.260	-----	0.073	J			
OCDF	ND	-----	0.140				
OCDD	0.430	-----	0.130	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10207 LUMB			
Lab Sample ID	40108983003			
Filename	F150113B_08			
Injected By	CVS			
Total Amount Extracted	20.4 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	12:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	18:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.220		2,3,7,8-TCDF-13C	2.00	58
Total TCDF	0.25	-----	0.220	J	2,3,7,8-TCDD-13C	2.00	69
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.200		2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	ND	-----	0.200		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	52
1,2,3,7,8-PeCDF	ND	-----	0.180		1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	-----	0.092		2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	1.20	-----	0.140	J	1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	54
1,2,3,7,8-PeCDD	ND	-----	0.110		1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	0.25	-----	0.110	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	51
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	0.076		1,2,3,4,6,7,8-HpCDD-13C	2.00	57
1,2,3,6,7,8-HxCDF	-----	0.13	0.090	IJ	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	0.094				
1,2,3,7,8,9-HxCDF	ND	-----	0.096		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.40	-----	0.089	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.130		2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	-----	0.24	0.150	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	1.70	-----	0.130	J			
1,2,3,4,6,7,8-HpCDF	3.10	-----	0.098		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 0.32 ng/Kg		
Total HpCDF	6.10	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.10	-----	0.180				
Total HpCDD	9.00	-----	0.180				
OCDF	1.80	-----	0.390	BJ			
OCDD	34.00	-----	0.270				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10208 LUMB			
Lab Sample ID	40108983004			
Filename	F150113B_09			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	14:25
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	19:36

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.53	-----	0.170		2,3,7,8-TCDF-13C	2.00	54
Total TCDF	4.10	-----	0.170		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	0.26	-----	0.200	J	2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	2.10	-----	0.200		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	0.27	-----	0.170	J	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	0.38	-----	0.110	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	6.90	-----	0.140		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	51
1,2,3,7,8-PeCDD	-----	0.24	0.130	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	48
Total PeCDD	1.40	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	0.39	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	-----	0.32	0.086	IJ	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	0.25	-----	0.140	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.100		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	11.00	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.15	0.091	IJ	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,6,7,8-HxCDD	-----	0.92	0.066	IJ			
1,2,3,7,8,9-HxCDD	0.28	-----	0.078	J			
Total HxCDD	4.20	-----	0.078				
1,2,3,4,6,7,8-HpCDF	7.70	-----	0.074		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.120		Equivalence: 1.0 ng/Kg		
Total HpCDF	14.00	-----	0.099		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.079				
Total HpCDD	6.30	-----	0.079				
OCDF	1.90	-----	0.250	BJ			
OCDD	17.00	-----	0.160				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10209 LUMB			
Lab Sample ID	40108983005-R			
Filename	F150120B_08			
Injected By	SMT			
Total Amount Extracted	5.20 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/06/2014	15:19
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	21:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.85	-----	0.32	J	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	4.90	-----	0.32		2,3,7,8-TCDD-13C	2.00	91
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.33		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.33		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	-----	0.20		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	-----	0.42	0.13	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	4.40	-----	0.17	J	1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	0.31	-----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	1.10	-----	0.19	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	0.28	-----	0.19	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	-----	0.40	0.16	IJ	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	0.21	-----	0.15	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.16		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	4.00	-----	0.16	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.36		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	-----	0.59	0.38	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.29				
Total HxCDD	2.20	-----	0.34	J			
1,2,3,4,6,7,8-HpCDF	4.30	-----	0.20	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.25		Equivalence: 0.98 ng/Kg		
Total HpCDF	8.20	-----	0.23	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.00	-----	0.24	J			
Total HpCDD	14.00	-----	0.24				
OCDF	2.30	-----	0.48	J			
OCDD	33.00	-----	0.63				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10210 LUMB			
Lab Sample ID	40108983006			
Filename	F150113B_11			
Injected By	CVS			
Total Amount Extracted	20.2 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	18:21
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	21:00

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.190		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	0.58	-----	0.190		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.160		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.160		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	-----	0.11	0.088	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	0.45	-----	0.096	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	-----	0.12	0.097	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	0.14	-----	0.097	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	-----	0.11	0.074	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	0.12	-----	0.068	J	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	0.065				
1,2,3,7,8,9-HxCDF	ND	-----	0.091		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.80	-----	0.074		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.099		2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.41	-----	0.100	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	1.40	-----	0.110	J			
1,2,3,4,6,7,8-HpCDF	3.10	-----	0.089		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.40 ng/Kg		
Total HpCDF	6.00	-----	0.096		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.10	-----	0.093				
Total HpCDD	11.00	-----	0.093				
OCDF	1.40	-----	0.300	BJ			
OCDD	27.00	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10212 LUMB			
Lab Sample ID	40108983007			
Filename	F150113B_12			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	18:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	21:42

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.250		2,3,7,8-TCDF-13C	2.00	55
Total TCDF	0.64	-----	0.250		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	0.210		2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	ND	-----	0.210		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	ND	-----	0.088		2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	1.40	-----	0.110	J	1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	50
1,2,3,7,8-PeCDD	ND	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.28	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	48
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	0.12	-----	0.082	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	53
1,2,3,6,7,8-HxCDF	ND	-----	0.087		OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	-----	0.071	0.065	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.086		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.40	-----	0.080	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.150	0.120	IJ	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	0.41	-----	0.150	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.110				
Total HxCDD	4.90	-----	0.120				
1,2,3,4,6,7,8-HpCDF	1.60	-----	0.160	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.220		Equivalence: 0.40 ng/Kg		
Total HpCDF	4.30	-----	0.190		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	8.10	-----	0.082				
Total HpCDD	41.00	-----	0.082				
OCDF	2.60	-----	0.210	J			
OCDD	77.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10213 LUMB			
Lab Sample ID	40108983008			
Filename	F150113B_13			
Injected By	CVS			
Total Amount Extracted	19.3 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	13:56
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	22:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.170	-----	0.100	J	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	1.000	-----	0.100		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	0.110		2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	0.190	-----	0.110	J	1,2,3,7,8-PeCDD-13C	2.00	82
					1,2,3,4,7,8-HxCDF-13C	2.00	59
1,2,3,7,8-PeCDF	ND	-----	0.084		1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	-----	0.130	0.058	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	1.300	-----	0.071	J	1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	0.078	-----	0.050	J	1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	0.650	-----	0.050	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	56
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.083	0.059	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	-----	0.051		OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	-----	0.056	0.055	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.057		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.500	-----	0.055	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.097	-----	0.068	J	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	0.310	-----	0.075	J			
1,2,3,7,8,9-HxCDD	-----	0.110	0.067	IJ			
Total HxCDD	3.600	-----	0.070				
1,2,3,4,6,7,8-HpCDF	1.700	-----	0.062	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.096		Equivalence: 0.34 ng/Kg		
Total HpCDF	3.600	-----	0.079		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.700	-----	0.048				
Total HpCDD	23.000	-----	0.048				
OCDF	1.700	-----	0.140	BJ			
OCDD	42.000	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10214 LUMB			
Lab Sample ID	40108983009			
Filename	F150113B_14			
Injected By	CVS			
Total Amount Extracted	19.6 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/07/2014	14:18
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	23:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.36	0.220	IJ	2,3,7,8-TCDF-13C	2.00	52
Total TCDF	3.10	-----	0.220		2,3,7,8-TCDD-13C	2.00	63
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	0.260		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	0.37	-----	0.260	J	1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	-----	0.16	0.110	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	53
Total PeCDF	3.40	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	53
					1,2,3,4,7,8-HxCDD-13C	2.00	47
1,2,3,7,8-PeCDD	ND	-----	0.120		1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.94	-----	0.120	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	46
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	0.21	-----	0.120	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	52
1,2,3,6,7,8-HxCDF	-----	0.21	0.080	IJ	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	-----	0.14	0.089	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.140		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.50	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.180		2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	-----	0.48	0.130	IJ			
1,2,3,7,8,9-HxCDD	0.28	-----	0.140	J			
Total HxCDD	4.40	-----	0.150				
1,2,3,4,6,7,8-HpCDF	3.00	-----	0.120		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.140		Equivalence: 0.58 ng/Kg		
Total HpCDF	6.70	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	9.80	-----	0.290				
Total HpCDD	44.00	-----	0.290				
OCDF	-----	3.50	0.340	IJ			
OCDD	95.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 102214 LUMB			
Lab Sample ID	40108983010			
Filename	F150113B_15			
Injected By	CVS			
Total Amount Extracted	20.2 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	10/22/2014	15:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150113B_01 & F150113B_18	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/13/2015	23:48

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.086		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	0.14	-----	0.086	J	2,3,7,8-TCDD-13C	2.00	98
					1,2,3,7,8-PeCDF-13C	2.00	95
2,3,7,8-TCDD	ND	-----	0.099		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	-----	0.099		1,2,3,7,8-PeCDD-13C	2.00	106
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.050		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	ND	-----	0.040		2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	ND	-----	0.045		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	ND	-----	0.063		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.063		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	ND	-----	0.042		1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	ND	-----	0.042		OCDD-13C	4.00	67
2,3,4,6,7,8-HxCDF	ND	-----	0.039				
1,2,3,7,8,9-HxCDF	ND	-----	0.053		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.061		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	-----	0.051				
1,2,3,7,8,9-HxCDD	ND	-----	0.050				
Total HxCDD	ND	-----	0.054				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.038		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.060		Equivalence: 0.11 ng/Kg		
Total HpCDF	ND	-----	0.049		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.070	0.062	IJ			
Total HpCDD	ND	-----	0.062				
OCDF	ND	-----	0.130				
OCDD	-----	0.290	0.160	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 102214 LUMB		
Lab Sample ID	40108983011		
Filename	F150114B_07		
Injected By	SMT		
Total Amount Extracted	20.3 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2014 08:33
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150114B_01 & F150115A_07	Extracted	01/08/2015 20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015 19:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.140	----	0.110	J	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	0.780	----	0.110		2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	----	0.130		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	0.260	----	0.130	J	1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	49
1,2,3,7,8-PeCDF	ND	----	0.066		1,2,3,6,7,8-HxCDF-13C	2.00	57
2,3,4,7,8-PeCDF	0.087	----	0.040	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	0.087	----	0.053	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	52
					1,2,3,4,7,8-HxCDD-13C	2.00	49
1,2,3,7,8-PeCDD	0.082	----	0.070	J	1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	0.190	----	0.070	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	41
					1,2,3,4,7,8,9-HpCDF-13C	2.00	41
1,2,3,4,7,8-HxCDF	ND	----	0.060		1,2,3,4,6,7,8-HpCDD-13C	2.00	44
1,2,3,6,7,8-HxCDF	0.079	----	0.059	J	OCDD-13C	4.00	39 R
2,3,4,6,7,8-HxCDF	----	0.069	0.054	IJ			
1,2,3,7,8,9-HxCDF	ND	----	0.069		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.190	----	0.061	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.071		2,3,7,8-TCDD-37Cl4	0.20	64
1,2,3,6,7,8-HxCDD	0.091	----	0.084	J			
1,2,3,7,8,9-HxCDD	ND	----	0.059				
Total HxCDD	0.220	----	0.071	J			
1,2,3,4,6,7,8-HpCDF	----	0.120	0.076	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	----	0.100	0.099	IJ	Equivalence: 0.23 ng/Kg		
Total HpCDF	ND	----	0.087		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.180	----	0.110	J			
Total HpCDD	0.180	----	0.110	J			
OCDF	0.530	----	0.240	BJ			
OCDD	0.740	----	0.280	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10215 LUMB			
Lab Sample ID	40108983012			
Filename	F150114A_05			
Injected By	CVS			
Total Amount Extracted	20.4 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	10:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	05:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.49	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	75
Total TCDF	4.40	-----	0.140		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	-----	0.26	0.160	IJ	2,3,4,7,8-PeCDF-13C	2.00	83
Total TCDD	3.00	-----	0.160		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.25	-----	0.100	J	1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	0.63	-----	0.100	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	8.50	-----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	0.58	-----	0.066	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	1.00	-----	0.066	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	58
1,2,3,4,7,8-HxCDF	0.43	-----	0.100	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	0.37	-----	0.100	J	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	0.42	-----	0.075	J			
1,2,3,7,8,9-HxCDF	-----	0.18	0.100	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	13.00	-----	0.096		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.23	-----	0.130	J	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.20	-----	0.180	J			
1,2,3,7,8,9-HxCDD	0.47	-----	0.110	J			
Total HxCDD	6.40	-----	0.140				
1,2,3,4,6,7,8-HpCDF	8.00	-----	0.093		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.28	-----	0.150	BJ	Equivalence: 1.5 ng/Kg		
Total HpCDF	16.00	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.00	-----	0.090				
Total HpCDD	11.00	-----	0.090				
OCDF	2.20	-----	0.190	BJ			
OCDD	23.00	-----	0.220				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10216 LUMB			
Lab Sample ID	40108983013			
Filename	F150114A_06			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:10
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	06:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.19	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	4.20	-----	0.140		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	0.096		1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	0.31	-----	0.099	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	3.00	-----	0.098		1,2,3,7,8,9-HxCDF-13C	2.00	67
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	0.12	-----	0.047	J	1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	0.21	-----	0.047	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	0.12	-----	0.092	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	ND	-----	0.088		OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	0.14	-----	0.075	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.099		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.70	-----	0.088	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.12	-----	0.081	J	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	0.26	-----	0.095	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.071				
Total HxCDD	1.20	-----	0.082	J			
1,2,3,4,6,7,8-HpCDF	1.10	-----	0.055	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.13	0.100	IJ	Equivalence: 0.41 ng/Kg		
Total HpCDF	2.10	-----	0.077	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	1.50	-----	0.078	J			
Total HpCDD	4.20	-----	0.078				
OCDF	1.00	-----	0.180	BJ			
OCDD	11.00	-----	0.240				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10217 LUMB			
Lab Sample ID	40108983014			
Filename	F150114A_07			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:10
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	06:48

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.40	0.180	IJ	2,3,7,8-TCDF-13C	2.00	50
Total TCDF	3.90	-----	0.180		2,3,7,8-TCDD-13C	2.00	60
					1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	0.240		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	1.20	-----	0.240		1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	48
1,2,3,7,8-PeCDF	ND	-----	0.180		1,2,3,6,7,8-HxCDF-13C	2.00	50
2,3,4,7,8-PeCDF	-----	0.37	0.120	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	6.60	-----	0.150		1,2,3,7,8,9-HxCDF-13C	2.00	51
					1,2,3,4,7,8-HxCDD-13C	2.00	45
1,2,3,7,8-PeCDD	0.36	-----	0.150	J	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	1.40	-----	0.150	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	46
1,2,3,4,7,8-HxCDF	0.30	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	50
1,2,3,6,7,8-HxCDF	0.29	-----	0.110	J	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	0.33	-----	0.083	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.130		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	10.00	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.21	0.190	IJ	2,3,7,8-TCDD-37Cl4	0.20	58
1,2,3,6,7,8-HxCDD	0.93	-----	0.150	J			
1,2,3,7,8,9-HxCDD	-----	0.30	0.110	IJ			
Total HxCDD	5.00	-----	0.150				
1,2,3,4,6,7,8-HpCDF	7.10	-----	0.090		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.160		Equivalence: 1.00 ng/Kg		
Total HpCDF	13.00	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.40	-----	0.100				
Total HpCDD	11.00	-----	0.100				
OCDF	2.40	-----	0.250	J			
OCDD	22.00	-----	0.270				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10218 LUMB			
Lab Sample ID	40108983015			
Filename	F150114A_08			
Injected By	CVS			
Total Amount Extracted	20.3 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/20/2014	16:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	07:31

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.44	0.210	IJ	2,3,7,8-TCDF-13C	2.00	46
Total TCDF	7.00	-----	0.210		2,3,7,8-TCDD-13C	2.00	53
					1,2,3,7,8-PeCDF-13C	2.00	53
2,3,7,8-TCDD	ND	-----	0.320		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	1.60	-----	0.320		1,2,3,7,8-PeCDD-13C	2.00	57
					1,2,3,4,7,8-HxCDF-13C	2.00	40
1,2,3,7,8-PeCDF	ND	-----	0.140		1,2,3,6,7,8-HxCDF-13C	2.00	47
2,3,4,7,8-PeCDF	0.64	-----	0.120	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	48
Total PeCDF	7.70	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	44
					1,2,3,4,7,8-HxCDD-13C	2.00	40
1,2,3,7,8-PeCDD	0.46	-----	0.200	J	1,2,3,6,7,8-HxCDD-13C	2.00	44
Total PeCDD	13.00	-----	0.200		1,2,3,4,6,7,8-HpCDF-13C	2.00	41
					1,2,3,4,7,8,9-HpCDF-13C	2.00	38 R
1,2,3,4,7,8-HxCDF	-----	0.23	0.120	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	44
1,2,3,6,7,8-HxCDF	0.17	-----	0.110	J	OCDD-13C	4.00	36 R
2,3,4,6,7,8-HxCDF	-----	0.19	0.086	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.100		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.50	-----	0.100	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.63	0.280	IJ	2,3,7,8-TCDD-37Cl4	0.20	45
1,2,3,6,7,8-HxCDD	3.20	-----	0.240				
1,2,3,7,8,9-HxCDD	1.60	-----	0.280	J			
Total HxCDD	51.00	-----	0.260				
1,2,3,4,6,7,8-HpCDF	1.30	-----	0.120	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.180		Equivalence: 2.0 ng/Kg		
Total HpCDF	2.90	-----	0.150		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	45.00	-----	0.089				
Total HpCDD	91.00	-----	0.089				
OCDF	-----	1.50	0.270	IJ			
OCDD	130.00	-----	0.290				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10219 LUMB			
Lab Sample ID	40108983016-R			
Filename	F150120B_09			
Injected By	SMT			
Total Amount Extracted	13.6 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	17:20
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	22:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.35	-----	0.080	J	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	6.00	-----	0.080		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	0.13	-----	0.097	J	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	1.30	-----	0.097		1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.23	-----	0.110	J	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	0.81	-----	0.072	J	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	14.00	-----	0.092		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	0.43	-----	0.100	J	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	2.40	-----	0.100	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	57
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	0.79	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	0.71	-----	0.088	J	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	0.40	-----	0.055	BJ			
1,2,3,7,8,9-HxCDF	-----	0.10	0.098	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	20.00	-----	0.089		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.12	0.096	IJ	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	1.20	-----	0.110	J			
1,2,3,7,8,9-HxCDD	0.39	-----	0.091	J			
Total HxCDD	6.50	-----	0.097				
1,2,3,4,6,7,8-HpCDF	17.00	-----	0.110		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 1.4 ng/Kg		
Total HpCDF	29.00	-----	0.130		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.099	J			
Total HpCDD	6.80	-----	0.099				
OCDF	3.00	-----	0.150	J			
OCDD	13.00	-----	0.190				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10220 LUMB			
Lab Sample ID	40108983017			
Filename	F150114A_12			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	10:20
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	10:19

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	----	0.24	0.130	IJ	2,3,7,8-TCDF-13C	2.00	54
Total TCDF	3.50	----	0.130		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	----	0.180		2,3,4,7,8-PeCDF-13C	2.00	62
Total TCDD	ND	----	0.180		1,2,3,7,8-PeCDD-13C	2.00	68
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	0.23	----	0.100	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	56
Total PeCDF	3.40	----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	51
					1,2,3,4,7,8-HxCDD-13C	2.00	47
1,2,3,7,8-PeCDD	----	0.11	0.085	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	0.68	----	0.085	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	45
					1,2,3,4,7,8,9-HpCDF-13C	2.00	43
1,2,3,4,7,8-HxCDF	----	0.13	0.099	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	0.16	----	0.094	J	OCDD-13C	4.00	41
2,3,4,6,7,8-HxCDF	0.15	----	0.073	J			
1,2,3,7,8,9-HxCDF	ND	----	0.095		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.40	----	0.090		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.088		2,3,7,8-TCDD-37Cl4	0.20	58
1,2,3,6,7,8-HxCDD	----	0.41	0.100	IJ			
1,2,3,7,8,9-HxCDD	----	0.14	0.094	IJ			
Total HxCDD	2.20	----	0.094	J			
1,2,3,4,6,7,8-HpCDF	2.80	----	0.099		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	0.120		Equivalence: 0.47 ng/Kg		
Total HpCDF	5.60	----	0.110		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	----	0.130				
Total HpCDD	9.70	----	0.130				
OCDF	0.90	----	0.200	BJ			
OCDD	17.00	----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10221 LUMB			
Lab Sample ID	40108983018			
Filename	F150114A_13			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/21/2014	13:40
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	11:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.30	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	8.90	-----	0.140		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	0.23	-----	0.190	J	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	2.30	-----	0.190		1,2,3,7,8-PeCDD-13C	2.00	83
					1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	0.43	-----	0.084	J	1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	1.20	-----	0.062	J	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	21.00	-----	0.073		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	0.61	-----	0.059	J	1,2,3,6,7,8-HxCDD-13C	2.00	58
Total PeCDD	5.10	-----	0.059		1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.82	0.074	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	1.40	-----	0.091	J	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.68	-----	0.074	J			
1,2,3,7,8,9-HxCDF	-----	0.19	0.110	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	31.00	-----	0.088		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.22	0.140	IJ	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,6,7,8-HxCDD	1.90	-----	0.120	J			
1,2,3,7,8,9-HxCDD	0.52	-----	0.098	J			
Total HxCDD	9.40	-----	0.120				
1,2,3,4,6,7,8-HpCDF	25.00	-----	0.085		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.150		Equivalence: 2.1 ng/Kg		
Total HpCDF	43.00	-----	0.120		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.30	-----	0.100				
Total HpCDD	7.40	-----	0.100				
OCDF	6.60	-----	0.170				
OCDD	16.00	-----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	BKGD 111214 LUMB			
Lab Sample ID	40108983019			
Filename	F150114A_14			
Injected By	CVS			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	11/12/2014	15:35
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150114A_01 & F150114A_17	Extracted	01/08/2015	20:00
Method Blank ID	BLANK-43557	Analyzed	01/14/2015	11:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.140		2,3,7,8-TCDF-13C	2.00	52
Total TCDF	ND	-----	0.140		2,3,7,8-TCDD-13C	2.00	61
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	ND	-----	0.082		2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	ND	-----	0.092		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	50
1,2,3,7,8-PeCDD	ND	-----	0.085		1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	0.086	-----	0.085	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	46
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	ND	-----	0.078		1,2,3,4,6,7,8-HpCDD-13C	2.00	52
1,2,3,6,7,8-HxCDF	0.064	-----	0.058	J	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	0.073				
1,2,3,7,8,9-HxCDF	ND	-----	0.088		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.140	-----	0.074	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.090		2,3,7,8-TCDD-37Cl4	0.20	56
1,2,3,6,7,8-HxCDD	ND	-----	0.096				
1,2,3,7,8,9-HxCDD	ND	-----	0.071				
Total HxCDD	ND	-----	0.085				
1,2,3,4,6,7,8-HpCDF	0.089	-----	0.073	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.130		Equivalence: 0.17 ng/Kg		
Total HpCDF	0.089	-----	0.100	B	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.096	-----	0.061	J			
Total HpCDD	0.170	-----	0.061	J			
OCDF	ND	-----	0.200				
OCDD	-----	0.28	0.200	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	CONTROL 111214 LUMB			
Lab Sample ID	40108983020-R			
Filename	F150120B_10			
Injected By	SMT			
Total Amount Extracted	5.00 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	12:00
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	23:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.39	-----	0.18	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	1.70	-----	0.18	J	2,3,7,8-TCDD-13C	2.00	92
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	0.21		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.21		1,2,3,7,8-PeCDD-13C	2.00	95
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.14		1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	ND	-----	0.13		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	0.13		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.13		1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	ND	-----	0.13		1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	ND	-----	0.13		1,2,3,4,6,7,8-HpCDD-13C	2.00	69
1,2,3,6,7,8-HxCDF	ND	-----	0.14		OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	ND	-----	0.11				
1,2,3,7,8,9-HxCDF	ND	-----	0.16		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.13		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.14		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	ND	-----	0.19				
1,2,3,7,8,9-HxCDD	ND	-----	0.17				
Total HxCDD	ND	-----	0.17				
1,2,3,4,6,7,8-HpCDF	-----	0.34	0.14	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.22		Equivalence: 0.29 ng/Kg		
Total HpCDF	ND	-----	0.18		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.50	-----	0.21	J			
Total HpCDD	0.50	-----	0.21	J			
OCDF	ND	-----	0.34				
OCDD	-----	1.70	0.44	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10222 LUMB			
Lab Sample ID	40108983021			
Filename	F150120B_11			
Injected By	SMT			
Total Amount Extracted	20.8 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	12:05
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/20/2015	23:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.72	-----	0.053		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	7.40	-----	0.053		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	-----	0.150	0.066	IJ	2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	2.90	-----	0.066		1,2,3,7,8-PeCDD-13C	2.00	87
					1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	0.18	-----	0.047	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	-----	0.370	0.045	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	7.40	-----	0.046		1,2,3,7,8,9-HxCDF-13C	2.00	77
					1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	0.26	-----	0.097	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	3.10	-----	0.097		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	-----	0.170	0.037	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	0.37	-----	0.052	J	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	0.20	-----	0.047	BJ			
1,2,3,7,8,9-HxCDF	-----	0.055	0.041	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	9.00	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.18	-----	0.063	J	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	0.81	-----	0.074	J			
1,2,3,7,8,9-HxCDD	0.33	-----	0.079	J			
Total HxCDD	5.70	-----	0.072				
1,2,3,4,6,7,8-HpCDF	5.60	-----	0.064		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.89 ng/Kg		
Total HpCDF	11.00	-----	0.082		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.80	-----	0.063				
Total HpCDD	7.00	-----	0.063				
OCDF	1.60	-----	0.089	J			
OCDD	15.00	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10223 LUMB			
Lab Sample ID	40108983022			
Filename	F150120B_12			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	14:00
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	00:31

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.29	-----	0.074	J	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	2.90	-----	0.074		2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	-----	0.097		2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	0.25	-----	0.097	J	1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	-----	0.068	0.054	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	0.23	-----	0.049	J	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	3.10	-----	0.051		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	0.16	-----	0.059	J	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	0.94	-----	0.059	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
					1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	0.18	-----	0.038	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	0.23	-----	0.047	J	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	-----	0.110	0.056	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.075		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.60	-----	0.054		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.110		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	0.37	-----	0.098	J			
1,2,3,7,8,9-HxCDD	-----	0.120	0.090	IJ			
Total HxCDD	1.40	-----	0.100	J			
1,2,3,4,6,7,8-HpCDF	2.90	-----	0.071		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.097		Equivalence: 0.47 ng/Kg		
Total HpCDF	5.70	-----	0.084		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.20	-----	0.120	J			
Total HpCDD	6.40	-----	0.120				
OCDF	1.30	-----	0.140	J			
OCDD	16.00	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10224 LUMB			
Lab Sample ID	40108983023			
Filename	F150120B_13			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	15:40
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	01:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.56	-----	0.064		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	7.20	-----	0.064		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	0.17	-----	0.058	J	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	1.90	-----	0.058		1,2,3,7,8-PeCDD-13C	2.00	78
					1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	0.16	-----	0.047	J	1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	0.39	-----	0.042	J	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	6.70	-----	0.045		1,2,3,7,8,9-HxCDF-13C	2.00	69
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	0.29	-----	0.071	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	2.50	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	0.22	-----	0.054	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	-----	0.220	0.052	IJ	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.13	-----	0.041	BJ			
1,2,3,7,8,9-HxCDF	-----	0.052	0.043	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	5.40	-----	0.048		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.110	0.049	IJ	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.58	-----	0.060	J			
1,2,3,7,8,9-HxCDD	-----	0.130	0.054	IJ			
Total HxCDD	3.60	-----	0.054				
1,2,3,4,6,7,8-HpCDF	3.70	-----	0.058		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.072		Equivalence: 0.84 ng/Kg		
Total HpCDF	7.00	-----	0.065		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.00	-----	0.074	J			
Total HpCDD	5.70	-----	0.074				
OCDF	1.20	-----	0.130	J			
OCDD	11.00	-----	0.091				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10225 LUMB			
Lab Sample ID	40108983024			
Filename	F150120B_14			
Injected By	SMT			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/11/2014	16:05
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	01:55

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.550	-----	0.065		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	5.600	-----	0.065		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	-----	0.12	0.068	IJ	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	2.200	-----	0.068		1,2,3,7,8-PeCDD-13C	2.00	81
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	-----	0.11	0.078	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	0.380	-----	0.074	J	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	7.500	-----	0.076		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	0.290	-----	0.094	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	2.900	-----	0.094		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	0.310	-----	0.045	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	-----	0.39	0.046	IJ	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	0.240	-----	0.037	BJ			
1,2,3,7,8,9-HxCDF	0.098	-----	0.049	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	8.500	-----	0.044		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.160	-----	0.087	J	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	0.860	-----	0.092	J			
1,2,3,7,8,9-HxCDD	0.260	-----	0.062	J			
Total HxCDD	5.600	-----	0.080				
1,2,3,4,6,7,8-HpCDF	5.500	-----	0.048		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.087		Equivalence: 0.90 ng/Kg		
Total HpCDF	10.000	-----	0.067		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	3.000	-----	0.081				
Total HpCDD	8.300	-----	0.081				
OCDF	1.400	-----	0.100	J			
OCDD	16.000	-----	0.120				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10226 LUMB		
Lab Sample ID	40108983025		
Filename	F150120B_15		
Injected By	SMT		
Total Amount Extracted	18.6 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/11/2014 16:30
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015 19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015 02:37

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.330	-----	0.052	J	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	2.700	-----	0.052		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	0.095	-----	0.080	J	2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	0.370	-----	0.080	J	1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	-----	0.050	0.034	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	0.190	-----	0.036	J	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	4.000	-----	0.035		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	-----	0.110	0.054	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	63
Total PeCDD	1.100	-----	0.054	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	0.160	-----	0.054	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	0.190	-----	0.046	J	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	0.180	-----	0.032	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.042		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.200	-----	0.043		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.086	0.054	IJ	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	0.550	-----	0.073	J			
1,2,3,7,8,9-HxCDD	0.220	-----	0.060	J			
Total HxCDD	4.900	-----	0.062				
1,2,3,4,6,7,8-HpCDF	6.600	-----	0.051		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.070		Equivalence: 0.58 ng/Kg		
Total HpCDF	13.000	-----	0.061		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	4.900	-----	0.051				
Total HpCDD	18.000	-----	0.051				
OCDF	2.500	-----	0.130	J			
OCDD	81.000	-----	0.140				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10254 LUMB		
Lab Sample ID	40108983026		
Filename	F150120B_16		
Injected By	SMT		
Total Amount Extracted	20.4 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2014 09:00
ICAL ID	F141223	Received	01/07/2015 10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015 19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015 03:19

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.320	-----	0.063	J	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	2.000	-----	0.063		2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	0.950	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	75
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	0.086	-----	0.049	J	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	-----	0.26	0.039	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	4.300	-----	0.044		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	0.190	-----	0.071	J	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	1.600	-----	0.071	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	-----	0.16	0.058	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	0.240	-----	0.047	J	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	0.100	-----	0.044	BJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.059		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.500	-----	0.052		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.11	0.079	IJ	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	-----	0.49	0.091	IJ			
1,2,3,7,8,9-HxCDD	-----	0.13	0.075	IJ			
Total HxCDD	2.800	-----	0.082				
1,2,3,4,6,7,8-HpCDF	5.100	-----	0.068		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.100		Equivalence: 0.55 ng/Kg		
Total HpCDF	9.500	-----	0.086		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	2.100	-----	0.088	J			
Total HpCDD	5.100	-----	0.088				
OCDF	1.100	-----	0.200	J			
OCDD	9.700	-----	0.140				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PASI Wisconsin

Client's Sample ID	10256 LUMB			
Lab Sample ID	40108983027			
Filename	F150120B_17			
Injected By	SMT			
Total Amount Extracted	20.1 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	12/12/2014	12:30
ICAL ID	F141223	Received	01/07/2015	10:19
CCal Filename(s)	F150120B_02 & F150120B_21	Extracted	01/15/2015	19:45
Method Blank ID	BLANK-43659	Analyzed	01/21/2015	04:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.110	-----	0.044	J	2,3,7,8-TCDF-13C	2.00	66
Total TCDF	0.710	-----	0.044		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	0.065		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	0.290	-----	0.065	J	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	0.030		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.031		2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.030		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	0.040		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	0.086	-----	0.040	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	-----	0.036		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	-----	0.033		OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	-----	0.031				
1,2,3,7,8,9-HxCDF	ND	-----	0.044		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.045	-----	0.036	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.039		2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	0.055	-----	0.047	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.037				
Total HxCDD	0.190	-----	0.041	J			
1,2,3,4,6,7,8-HpCDF	-----	0.077	0.043	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.049		Equivalence: 0.087 ng/Kg		
Total HpCDF	ND	-----	0.046		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.110	0.046	IJ			
Total HpCDD	ND	-----	0.046				
OCDF	ND	-----	0.110				
OCDD	0.530	-----	0.130	BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-43557	Matrix	Tissue
Filename	F150113B_05	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	01/08/2015 20:00
ICAL ID	F141223	Analyzed	01/13/2015 16:48
CCal Filename(s)	F150113B_01 & F150113B_18	Injected By	CVS

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.130		2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	-----	0.130		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	101
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.061		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	0.077	-----	0.051	J	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	0.077	-----	0.056	J	1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.066		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.066		1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.051		1,2,3,4,6,7,8-HpCDD-13C	2.00	83
1,2,3,6,7,8-HxCDF	ND	-----	0.041		OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	ND	-----	0.047				
1,2,3,7,8,9-HxCDF	ND	-----	0.061		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.059	-----	0.050	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.046		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	ND	-----	0.051				
1,2,3,7,8,9-HxCDD	ND	-----	0.047				
Total HxCDD	ND	-----	0.048				
1,2,3,4,6,7,8-HpCDF	-----	0.053	0.040	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.096	-----	0.057	J	Equivalence: 0.16 ng/Kg		
Total HpCDF	0.096	-----	0.048	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.052				
Total HpCDD	ND	-----	0.052				
OCDF	0.230	-----	0.120	J			
OCDD	-----	0.320	0.160	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-43659	Matrix	Tissue
Filename	F150120B_07	Dilution	NA
Total Amount Extracted	20.4 g	Extracted	01/15/2015 19:45
ICAL ID	F141223	Analyzed	01/20/2015 21:01
CCal Filename(s)	F150120B_02 & F150120B_21	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.054		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.054		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	-----	0.074		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	ND	-----	0.074		1,2,3,7,8-PeCDD-13C	2.00	86
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	0.045		1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	0.032		2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	ND	-----	0.038		1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	-----	0.051		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.051		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	-----	0.033		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	0.030		OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	0.041	-----	0.025	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.038		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.041	-----	0.031	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.054		2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	ND	-----	0.061				
1,2,3,7,8,9-HxCDD	ND	-----	0.049				
Total HxCDD	ND	-----	0.055				
1,2,3,4,6,7,8-HpCDF	-----	0.047	0.036	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.062		Equivalence: 0.089 ng/Kg		
Total HpCDF	0.051	-----	0.049	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.060				
Total HpCDD	ND	-----	0.060				
OCDF	ND	-----	0.110				
OCDD	0.200	-----	0.140	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-43558		
Filename	F150113B_16	Matrix	Tissue
Total Amount Extracted	21.5 g	Dilution	NA
ICAL ID	F141223	Extracted	01/08/2015 20:00
CCal Filename(s)	F150113B_01 & F150113B_18	Analyzed	01/14/2015 00:30
Method Blank ID	BLANK-43557	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	117	2,3,7,8-TCDF-13C	2.0	71
Total TCDF				2,3,7,8-TCDD-13C	2.0	86
				1,2,3,7,8-PeCDF-13C	2.0	87
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.0	87
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	98
				1,2,3,4,7,8-HxCDF-13C	2.0	67
1,2,3,7,8-PeCDF	1.0	1.2	118	1,2,3,6,7,8-HxCDF-13C	2.0	77
2,3,4,7,8-PeCDF	1.0	1.2	119	2,3,4,6,7,8-HxCDF-13C	2.0	76
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	76
				1,2,3,4,7,8-HxCDD-13C	2.0	68
1,2,3,7,8-PeCDD	1.0	0.99	99	1,2,3,6,7,8-HxCDD-13C	2.0	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	68
				1,2,3,4,7,8,9-HpCDF-13C	2.0	70
1,2,3,4,7,8-HxCDF	1.0	1.2	120	1,2,3,4,6,7,8-HpCDD-13C	2.0	76
1,2,3,6,7,8-HxCDF	1.0	1.2	117	OCDD-13C	4.0	68
2,3,4,6,7,8-HxCDF	1.0	1.1	113			
1,2,3,7,8,9-HxCDF	1.0	1.1	115	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	118	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	1.0	1.2	124			
1,2,3,7,8,9-HxCDD	1.0	1.2	123			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	115			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	108			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	103			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.3	117			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-43660		
Filename	F150120B_18	Matrix	Tissue
Total Amount Extracted	21.1 g	Dilution	NA
ICAL ID	F141223	Extracted	01/15/2015 19:45
CCal Filename(s)	F150120B_02 & F150120B_21	Analyzed	01/21/2015 04:43
Method Blank ID	BLANK-43659	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	119	2,3,7,8-TCDF-13C	2.0	66
Total TCDF				2,3,7,8-TCDD-13C	2.0	79
				1,2,3,7,8-PeCDF-13C	2.0	68
2,3,7,8-TCDD	0.20	0.20	101	2,3,4,7,8-PeCDF-13C	2.0	69
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	77
				1,2,3,4,7,8-HxCDF-13C	2.0	69
1,2,3,7,8-PeCDF	1.0	1.2	122	1,2,3,6,7,8-HxCDF-13C	2.0	77
2,3,4,7,8-PeCDF	1.0	1.2	121	2,3,4,6,7,8-HxCDF-13C	2.0	77
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	71
				1,2,3,4,7,8-HxCDD-13C	2.0	69
1,2,3,7,8-PeCDD	1.0	1.0	102	1,2,3,6,7,8-HxCDD-13C	2.0	68
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	67
				1,2,3,4,7,8,9-HpCDF-13C	2.0	64
1,2,3,4,7,8-HxCDF	1.0	1.2	122	1,2,3,4,6,7,8-HpCDD-13C	2.0	70
1,2,3,6,7,8-HxCDF	1.0	1.2	118	OCDD-13C	4.0	58
2,3,4,6,7,8-HxCDF	1.0	1.1	111			
1,2,3,7,8,9-HxCDF	1.0	1.1	113	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	114	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	1.0	1.3	130			
1,2,3,7,8,9-HxCDD	1.0	1.3	126			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	117			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	108			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.5	123			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-43559		
Filename	F150113B_17	Matrix	Tissue
Total Amount Extracted	20.3 g	Dilution	NA
ICAL ID	F141223	Extracted	01/08/2015 20:00
CCal Filename(s)	F150113B_01 & F150113B_18	Analyzed	01/14/2015 01:12
Method Blank ID	BLANK-43557	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.0	78
Total TCDF				2,3,7,8-TCDD-13C	2.0	93
				1,2,3,7,8-PeCDF-13C	2.0	88
2,3,7,8-TCDD	0.20	0.18	92	2,3,4,7,8-PeCDF-13C	2.0	91
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	99
				1,2,3,4,7,8-HxCDF-13C	2.0	73
1,2,3,7,8-PeCDF	1.0	1.2	122	1,2,3,6,7,8-HxCDF-13C	2.0	82
2,3,4,7,8-PeCDF	1.0	1.2	119	2,3,4,6,7,8-HxCDF-13C	2.0	80
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	79
				1,2,3,4,7,8-HxCDD-13C	2.0	74
1,2,3,7,8-PeCDD	1.0	1.0	102	1,2,3,6,7,8-HxCDD-13C	2.0	76
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	73
				1,2,3,4,7,8,9-HpCDF-13C	2.0	76
1,2,3,4,7,8-HxCDF	1.0	1.2	122	1,2,3,4,6,7,8-HpCDD-13C	2.0	80
1,2,3,6,7,8-HxCDF	1.0	1.2	118	OCDD-13C	4.0	74
2,3,4,6,7,8-HxCDF	1.0	1.1	113			
1,2,3,7,8,9-HxCDF	1.0	1.2	118	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	119	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	1.0	1.3	126			
1,2,3,7,8,9-HxCDD	1.0	1.2	122			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	116			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	110			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	107			
Total HpCDD						
OCDF	2.0	2.4	120			
OCDD	2.0	2.4	122			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-43661		
Filename	F150120B_19	Matrix	Tissue
Total Amount Extracted	20.8 g	Dilution	NA
ICAL ID	F141223	Extracted	01/15/2015 19:45
CCal Filename(s)	F150120B_02 & F150120B_21	Analyzed	01/21/2015 05:25
Method Blank ID	BLANK-43659	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.0	69
Total TCDF				2,3,7,8-TCDD-13C	2.0	83
				1,2,3,7,8-PeCDF-13C	2.0	73
2,3,7,8-TCDD	0.20	0.20	99	2,3,4,7,8-PeCDF-13C	2.0	74
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	82
				1,2,3,4,7,8-HxCDF-13C	2.0	71
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	81
2,3,4,7,8-PeCDF	1.0	1.1	115	2,3,4,6,7,8-HxCDF-13C	2.0	81
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	73
				1,2,3,4,7,8-HxCDD-13C	2.0	71
1,2,3,7,8-PeCDD	1.0	1.0	101	1,2,3,6,7,8-HxCDD-13C	2.0	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	69
				1,2,3,4,7,8,9-HpCDF-13C	2.0	65
1,2,3,4,7,8-HxCDF	1.0	1.2	120	1,2,3,4,6,7,8-HpCDD-13C	2.0	73
1,2,3,6,7,8-HxCDF	1.0	1.1	111	OCDD-13C	4.0	61
2,3,4,6,7,8-HxCDF	1.0	1.1	108			
1,2,3,7,8,9-HxCDF	1.0	1.1	113	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	116	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.0	1.2	123			
1,2,3,7,8,9-HxCDD	1.0	1.2	123			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	117			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	112			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106			
Total HpCDD						
OCDF	2.0	2.3	117			
OCDD	2.0	2.4	119			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	PASI Wisconsin		
Spike 1 ID	LCS-43558	Spike 2 ID	LCSD-43559
Spike 1 Filename	F150113B_16	Spike 2 Filename	F150113B_17

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	117	116	0.9
2,3,7,8-TCDD	93	92	1.1
1,2,3,7,8-PeCDF	118	122	3.3
2,3,4,7,8-PeCDF	119	119	0.0
1,2,3,7,8-PeCDD	99	102	3.0
1,2,3,4,7,8-HxCDF	120	122	1.7
1,2,3,6,7,8-HxCDF	117	118	0.9
2,3,4,6,7,8-HxCDF	113	113	0.0
1,2,3,7,8,9-HxCDF	115	118	2.6
1,2,3,4,7,8-HxCDD	118	119	0.8
1,2,3,6,7,8-HxCDD	124	126	1.6
1,2,3,7,8,9-HxCDD	123	122	0.8
1,2,3,4,6,7,8-HpCDF	115	116	0.9
1,2,3,4,7,8,9-HpCDF	108	110	1.8
1,2,3,4,6,7,8-HpCDD	103	107	3.8
OCDF	120	120	0.0
OCDD	117	122	4.2

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	PASI Wisconsin		
Spike 1 ID	LCS-43660	Spike 2 ID	LCSD-43661
Spike 1 Filename	F150120B_18	Spike 2 Filename	F150120B_19

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	119	116	2.6
2,3,7,8-TCDD	101	99	2.0
1,2,3,7,8-PeCDF	122	117	4.2
2,3,4,7,8-PeCDF	121	115	5.1
1,2,3,7,8-PeCDD	102	101	1.0
1,2,3,4,7,8-HxCDF	122	120	1.7
1,2,3,6,7,8-HxCDF	118	111	6.1
2,3,4,6,7,8-HxCDF	111	108	2.7
1,2,3,7,8,9-HxCDF	113	113	0.0
1,2,3,4,7,8-HxCDD	114	116	1.7
1,2,3,6,7,8-HxCDD	130	123	5.5
1,2,3,7,8,9-HxCDD	126	123	2.4
1,2,3,4,6,7,8-HpCDF	117	117	0.0
1,2,3,4,7,8,9-HpCDF	108	112	3.6
1,2,3,4,6,7,8-HpCDD	106	106	0.0
OCDF	120	117	2.5
OCDD	123	119	3.3

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 21, 2014

Dennis McCauley
Great Lakes Environmental Center, Inc.
739 Hastings Street
Traverse City, MI 49686

RE: Project: 2290-00 STANTEC
Pace Project No.: 40104743

Dear Dennis McCauley:
Enclosed are the analytical results for sample(s) received by the laboratory on October 03, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
tod.noltemeyer@pacelabs.com
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012
Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40104743001	**SS 1022-AT (15 CM)**	Solid	09/16/14 09:00	10/03/14 11:25
40104743002	**SS 1024-AT (15 CM)**	Solid	09/16/14 10:45	10/03/14 11:25
40104743003	**SS 1032-AT (15 CM)**	Solid	09/15/14 15:45	10/03/14 11:25
40104743004	**SS 1021-AT (15 CM)**	Solid	09/15/14 18:10	10/03/14 11:25
40104743005	**SS 1026-AT (15 CM)**	Solid	09/16/14 14:45	10/03/14 11:25
40104743006	**SS 1028-AT (15 CM)**	Solid	09/16/14 15:30	10/03/14 11:25
40104743007	**SS 1025-AT (15 CM)**	Solid	09/16/14 11:50	10/03/14 11:25
40104743008	**SS 1010-AT (15 CM)**	Solid	09/17/14 11:05	10/03/14 11:25
40104743009	**SS 1029-AT (15 CM)**	Solid	09/17/14 08:40	10/03/14 11:25
40104743010	**SS 1001-AT (15 CM)**	Solid	09/17/14 12:00	10/03/14 11:25
40104743011	**SS 1042-AT (15 CM)**	Solid	09/17/14 09:40	10/03/14 11:25
40104743012	**SS 1009-AT (15 CM)**	Solid	09/18/14 15:00	10/03/14 11:25
40104743013	**SS 1017-AT (15 CM)**	Solid	09/18/14 14:00	10/03/14 11:25
40104743014	**SS 1011-AT (15 CM)**	Solid	09/18/14 14:40	10/03/14 11:25
40104743015	**SS 1031-AT (15 CM)**	Solid	09/18/14 10:20	10/03/14 11:25
40104743016	**SS 1033-AT (15 CM)**	Solid	09/18/14 08:55	10/03/14 11:25
40104743017	**SS 1034-AT (15 CM)**	Solid	09/18/14 09:40	10/03/14 11:25
40104743018	**SS 1002-AT (15 CM)**	Solid	09/18/14 16:15	10/03/14 11:25
40104743019	**SS 1005-AT (15 CM)**	Solid	09/18/14 15:35	10/03/14 11:25
40104743020	**SS 1041-AT (15 CM)**	Solid	09/19/14 08:40	10/03/14 11:25
40104743021	**SS 1012-AT (15 CM)**	Solid	09/19/14 11:45	10/03/14 11:25

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40104743001	**SS 1022-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743002	**SS 1024-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743003	**SS 1032-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743004	**SS 1021-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743005	**SS 1026-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743006	**SS 1028-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743007	**SS 1025-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743008	**SS 1010-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743009	**SS 1029-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743010	**SS 1001-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KJB	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743011	**SS 1042-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743012	**SS 1009-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743013	**SS 1017-AT (15 CM)**	ASA 15-5 mod	WT1	4	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743014	**SS 1011-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743015	**SS 1031-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743016	**SS 1033-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743017	**SS 1034-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743018	**SS 1002-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743019	**SS 1005-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743020	**SS 1041-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G
40104743021	**SS 1012-AT (15 CM)**	ASA 15-5 mod	WT1	4	
		ASTM D2974-87	KEW	1	PASI-G
		Walkley Black	TJJ	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Method: **ASA 15-5 mod**
Description: PSA Percent Sand,Silt,Clay
Client: Great Lakes Environmental Center
Date: October 21, 2014

General Information:
21 samples were analyzed for ASA 15-5 mod. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Method: **Walkley Black**
Description: Organic Carbon Walkley Black
Client: Great Lakes Environmental Center
Date: October 21, 2014

General Information:
21 samples were analyzed for Walkley Black. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with Walkley Black with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1022-AT (15 CM) **Lab ID: 40104743001** Collected: 09/16/14 09:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:14		
Percent Sand	**25.0**	% (w/w)	0.10		1		10/14/14 16:14		
Percent Silt	**55.0**	% (w/w)	0.10		1		10/14/14 16:14		
Texture	**silt loam**				1		10/14/14 16:14		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**54.7**	%	0.10	0.10	1		10/07/14 14:24		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**100000**	mg/kg	3230	749	1	10/10/14 08:29	10/10/14 12:46	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1024-AT (15 CM) **Lab ID: 40104743002** Collected: 09/16/14 10:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:17		
Percent Sand	**20.0**	% (w/w)	0.10		1		10/14/14 16:17		
Percent Silt	**60.0**	% (w/w)	0.10		1		10/14/14 16:17		
Texture	**silt loam**				1		10/14/14 16:17		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**51.2**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**31700**	mg/kg	2020	469	1	10/10/14 08:29	10/10/14 12:46	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1032-AT (15 CM) **Lab ID: 40104743003** Collected: 09/15/14 15:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:23		
Percent Sand	**47.5**	% (w/w)	0.10		1		10/14/14 16:23		
Percent Silt	**40.0**	% (w/w)	0.10		1		10/14/14 16:23		
Texture	**loam**				1		10/14/14 16:23		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**49.1**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**37700**	mg/kg	2940	683	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1021-AT (15 CM) **Lab ID: 40104743004** Collected: 09/15/14 18:10 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:26		
Percent Sand	**45.0**	% (w/w)	0.10		1		10/14/14 16:26		
Percent Silt	**42.5**	% (w/w)	0.10		1		10/14/14 16:26		
Texture	**loam**				1		10/14/14 16:26		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**46.2**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**44100**	mg/kg	2410	560	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1026-AT (15 CM) **Lab ID: 40104743005** Collected: 09/16/14 14:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 16:30		
Percent Sand	**37.5**	% (w/w)	0.10		1		10/14/14 16:30		
Percent Silt	**50.0**	% (w/w)	0.10		1		10/14/14 16:30		
Texture	**silt loam**				1		10/14/14 16:30		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**60.7**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**102000**	mg/kg	1770	411	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1028-AT (15 CM) **Lab ID: 40104743006** Collected: 09/16/14 15:30 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**7.5**	% (w/w)	0.10		1		10/14/14 16:33		
Percent Sand	**72.5**	% (w/w)	0.10		1		10/14/14 16:33		
Percent Silt	**20.0**	% (w/w)	0.10		1		10/14/14 16:33		
Texture	**sandy loam**				1		10/14/14 16:33		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**52.7**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**134000**	mg/kg	2200	511	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1025-AT (15 CM) **Lab ID: 40104743007** Collected: 09/16/14 11:50 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**22.5**	% (w/w)	0.10		1		10/14/14 16:38		
Percent Sand	**17.5**	% (w/w)	0.10		1		10/14/14 16:38		
Percent Silt	**60.0**	% (w/w)	0.10		1		10/14/14 16:38		
Texture	**silt loam**				1		10/14/14 16:38		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**70.9**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**92900**	mg/kg	1690	394	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1010-AT (15 CM) **Lab ID: 40104743008** Collected: 09/17/14 11:05 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:41		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 16:41		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 16:41		
Texture	**silt loam**				1		10/14/14 16:41		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.3**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**45700**	mg/kg	2500	581	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1029-AT (15 CM) **Lab ID: 40104743009** Collected: 09/17/14 08:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**5.0**	% (w/w)	0.10		1		10/14/14 16:44		
Percent Sand	**80.0**	% (w/w)	0.10		1		10/14/14 16:44		
Percent Silt	**15.0**	% (w/w)	0.10		1		10/14/14 16:44		
Texture	**loamy sand**				1		10/14/14 16:44		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**30.5**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**38000**	mg/kg	1550	360	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1001-AT (15 CM) **Lab ID: 40104743010** Collected: 09/17/14 12:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 16:47		
Percent Sand	**27.5**	% (w/w)	0.10		1		10/14/14 16:47		
Percent Silt	**52.5**	% (w/w)	0.10		1		10/14/14 16:47		
Texture	**silt loam**				1		10/14/14 16:47		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.8**	%	0.10	0.10	1		10/07/14 14:25		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**52700**	mg/kg	2560	596	1	10/10/14 08:29	10/10/14 12:47	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1042-AT (15 CM) **Lab ID: 40104743011** Collected: 09/17/14 09:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**7.5**	% (w/w)	0.10		1		10/14/14 16:50		
Percent Sand	**75.0**	% (w/w)	0.10		1		10/14/14 16:50		
Percent Silt	**17.5**	% (w/w)	0.10		1		10/14/14 16:50		
Texture	**sandy loam**				1		10/14/14 16:50		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**34.4**	%	0.10	0.10	1		10/10/14 09:52		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**30200**	mg/kg	2740	636	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1009-AT (15 CM) **Lab ID: 40104743012** Collected: 09/18/14 15:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**15.0**	% (w/w)	0.10		1		10/14/14 16:54		
Percent Sand	**52.5**	% (w/w)	0.10		1		10/14/14 16:54		
Percent Silt	**32.5**	% (w/w)	0.10		1		10/14/14 16:54		
Texture	**sandy loam**				1		10/14/14 16:54		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**50.8**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**60400**	mg/kg	3640	845	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1017-AT (15 CM) **Lab ID: 40104743013** Collected: 09/18/14 14:00 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**17.5**	% (w/w)	0.10		1		10/14/14 16:57		
Percent Sand	**30.0**	% (w/w)	0.10		1		10/14/14 16:57		
Percent Silt	**52.5**	% (w/w)	0.10		1		10/14/14 16:57		
Texture	**silt loam**				1		10/14/14 16:57		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**55.0**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**82900**	mg/kg	3450	801	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1011-AT (15 CM) **Lab ID: 40104743014** Collected: 09/18/14 14:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**17.5**	% (w/w)	0.10		1		10/14/14 17:00		
Percent Sand	**60.0**	% (w/w)	0.10		1		10/14/14 17:00		
Percent Silt	**22.5**	% (w/w)	0.10		1		10/14/14 17:00		
Texture	**sandy loam**				1		10/14/14 17:00		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**51.2**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**46500**	mg/kg	2150	500	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1031-AT (15 CM) **Lab ID: 40104743015** Collected: 09/18/14 10:20 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**22.5**	% (w/w)	0.10		1		10/14/14 17:07		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 17:07		
Percent Silt	**55.0**	% (w/w)	0.10		1		10/14/14 17:07		
Texture	**silt loam**				1		10/14/14 17:07		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**57.1**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**40300**	mg/kg	3330	774	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1033-AT (15 CM) **Lab ID: 40104743016** Collected: 09/18/14 08:55 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**27.5**	% (w/w)	0.10		1		10/14/14 17:09		
Percent Sand	**10.0**	% (w/w)	0.10		1		10/14/14 17:09		
Percent Silt	**62.5**	% (w/w)	0.10		1		10/14/14 17:09		
Texture	**silty clay loam**				1		10/14/14 17:09		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**71.6**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**95000**	mg/kg	3510	815	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1034-AT (15 CM) **Lab ID: 40104743017** Collected: 09/18/14 09:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**32.5**	% (w/w)	0.10		1		10/14/14 17:12		
Percent Sand	**10.0**	% (w/w)	0.10		1		10/14/14 17:12		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 17:12		
Texture	**silty clay loam**				1		10/14/14 17:12		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**70.8**	%	0.10	0.10	1		10/10/14 10:31		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**55300**	mg/kg	2630	611	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1002-AT (15 CM) **Lab ID: 40104743018** Collected: 09/18/14 16:15 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**27.5**	% (w/w)	0.10		1		10/14/14 17:15		
Percent Sand	**15.0**	% (w/w)	0.10		1		10/14/14 17:15		
Percent Silt	**57.5**	% (w/w)	0.10		1		10/14/14 17:15		
Texture	**silty clay loam**				1		10/14/14 17:15		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**66.3**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**75400**	mg/kg	2990	693	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1005-AT (15 CM) **Lab ID: 40104743019** Collected: 09/18/14 15:35 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**20.0**	% (w/w)	0.10		1		10/14/14 17:27		
Percent Sand	**22.5**	% (w/w)	0.10		1		10/14/14 17:27		
Percent Silt	**57..5**	% (w/w)	0.10		1		10/14/14 17:27		
Texture	**silt loam**				1		10/14/14 17:27		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**56.4**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**97700**	mg/kg	2700	628	1	10/10/14 08:29	10/10/14 12:48	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1041-AT (15 CM) **Lab ID: 40104743020** Collected: 09/19/14 08:40 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**2.5**	% (w/w)	0.10		1		10/14/14 17:30		
Percent Sand	**92.5**	% (w/w)	0.10		1		10/14/14 17:30		
Percent Silt	**5.0**	% (w/w)	0.10		1		10/14/14 17:30		
Texture	**sand**				1		10/14/14 17:30		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.0**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**2710**	mg/kg	563	131	1	10/10/14 08:29	10/10/14 12:49	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Sample: SS 1012-AT (15 CM) **Lab ID: 40104743021** Collected: 09/19/14 11:45 Received: 10/03/14 11:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
PSA Percent Sand,Silt,Clay	Analytical Method: ASA 15-5 mod								
Percent Clay	**12.5**	% (w/w)	0.10		1		10/14/14 17:39		
Percent Sand	**57.5**	% (w/w)	0.10		1		10/14/14 17:39		
Percent Silt	**30.0**	% (w/w)	0.10		1		10/14/14 17:39		
Texture	**sandy loam**				1		10/14/14 17:39		
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**41.8**	%	0.10	0.10	1		10/10/14 10:32		
Organic Carbon Walkley Black	Analytical Method: Walkley Black Preparation Method: Walkley Black								
Total Organic Carbon	**35500**	mg/kg	3920	911	1	10/13/14 11:23	10/13/14 14:28	7440-44-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10411 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010

SAMPLE DUPLICATE: 1059660

Parameter	Units	40104757003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.0	4.1	3	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10445
QC Batch Method: ASTM D2974-87
Associated Lab Samples: 40104743011

Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture

SAMPLE DUPLICATE: 1061555

Parameter	Units	40104676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.2	17.3	7	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: PMST/10446 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020, 40104743021

SAMPLE DUPLICATE: 1061632

Parameter	Units	40105014003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.1	15.9	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: WETA/25507 — Analysis Method: Walkley Black
QC Batch Method: Walkley Black — Analysis Description: Organic Carbon
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010, 40104743011, 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020

METHOD BLANK: 1060303 — Matrix: Solid
Associated Lab Samples: 40104743001, 40104743002, 40104743003, 40104743004, 40104743005, 40104743006, 40104743007, 40104743008, 40104743009, 40104743010, 40104743011, 40104743012, 40104743013, 40104743014, 40104743015, 40104743016, 40104743017, 40104743018, 40104743019, 40104743020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/kg	<92.9	400	10/10/14 12:46	

LABORATORY CONTROL SAMPLE: 1060304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/kg	16000	16000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1060305 — 1060306

Parameter	Units	40104743001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	100000	129000	129000	228000	223000	99	95	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1060307 — 1060308

Parameter	Units	40104743002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	31700	80800	80800	110000	112000	97	99	80-120	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40104743

QC Batch: WETA/25564
QC Batch Method: Walkley Black
Analysis Method: Walkley Black
Analysis Description: Organic Carbon
Associated Lab Samples: 40104743021

METHOD BLANK: 1062646
Matrix: Solid
Associated Lab Samples: 40104743021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/kg	<92.9	400	10/13/14 14:28	

LABORATORY CONTROL SAMPLE: 1062647

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/kg	16000	15700	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1062648 1062649

Parameter	Units	40104743021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	35500	157000	157000	196000	197000	102	103	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1062650 1062651

Parameter	Units	50104645001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/kg	19100	154000	154000	171000	174000	98	101	80-120	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40104743

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

BATCH QUALIFIERS

Batch: WETA/25552

[WB] Results reported on dry weight basis per cited method.

Batch: WETA/25580

[WB] Results reported on dry weight basis per cited method.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40104743001	**SS 1022-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743002	**SS 1024-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743003	**SS 1032-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743004	**SS 1021-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743005	**SS 1026-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743006	**SS 1028-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743007	**SS 1025-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743008	**SS 1010-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743009	**SS 1029-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743010	**SS 1001-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743011	**SS 1042-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743012	**SS 1009-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743013	**SS 1017-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743014	**SS 1011-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743015	**SS 1031-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743016	**SS 1033-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743017	**SS 1034-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743018	**SS 1002-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743019	**SS 1005-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743020	**SS 1041-AT (15 CM)**	ASA 15-5 mod	MT/17161		
40104743021	**SS 1012-AT (15 CM)**	ASA 15-5 mod	MT/17162		
40104743001	**SS 1022-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743002	**SS 1024-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743003	**SS 1032-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743004	**SS 1021-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743005	**SS 1026-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743006	**SS 1028-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743007	**SS 1025-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743008	**SS 1010-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743009	**SS 1029-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743010	**SS 1001-AT (15 CM)**	ASTM D2974-87	PMST/10411		
40104743011	**SS 1042-AT (15 CM)**	ASTM D2974-87	PMST/10445		
40104743012	**SS 1009-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743013	**SS 1017-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743014	**SS 1011-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743015	**SS 1031-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743016	**SS 1033-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743017	**SS 1034-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743018	**SS 1002-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743019	**SS 1005-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743020	**SS 1041-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743021	**SS 1012-AT (15 CM)**	ASTM D2974-87	PMST/10446		
40104743001	**SS 1022-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743002	**SS 1024-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743003	**SS 1032-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743004	**SS 1021-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40104743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40104743005	**SS 1026-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743006	**SS 1028-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743007	**SS 1025-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743008	**SS 1010-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743009	**SS 1029-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743010	**SS 1001-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743011	**SS 1042-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743012	**SS 1009-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743013	**SS 1017-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743014	**SS 1011-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743015	**SS 1031-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743016	**SS 1033-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743017	**SS 1034-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743018	**SS 1002-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743019	**SS 1005-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743020	**SS 1041-AT (15 CM)**	Walkley Black	WETA/25507	Walkley Black	WETA/25552
40104743021	**SS 1012-AT (15 CM)**	Walkley Black	WETA/25564	Walkley Black	WETA/25580

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

RLS

Bottle Order # 35165

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

FILTERED? (YES/NO) Y/N
PRESERVATION (CODE)* A

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

Analyses Requested: # of jars

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	# of jars	Pick Letter	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
01	SS 1022-AT (15 CM)	9/16/14	0900	S	32	2-4oz Ag A (Nick 10/2/14)	collected in lab: 10/2/14	1-8oz Ag A	
02	SS 1024-AT (15 CM)	9/16/14	1045	S	32				
03	SS 1032-AT (15 CM)	9/15/14	1545	S	32				
04	SS 1021-AT (15 CM)	9/15/14	1810	S	32				
05	SS 1026-AT (15 CM)	9/16/14	1445	S	32				
06	SS 1028-AT (15 CM)	9/16/14	1530	S	32				
07	SS 1025-AT (15 CM)	9/16/14	1150	S	32				
08	SS 1010-AT (15 CM)	9/17/14	1105	S	32				
09	SS 1029-AT (15 CM)	9/17/14	0840	S	32				
10	SS 1001-AT (15 CM)	9/17/14	1200	S	32	1-4oz Ag A			
11	SS 1042-AT (15 CM)	9/17/14	0940	S	32				
12	SS 1009-AT (15 CM)	9/18/14	1500	S	32				
13	SS 1017-AT (15 CM)	9/18/14	1400	S	32		collected in lab: 10/2/14		

See bottle order # 35165

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Maile Wilbert	10/3/14 1500		
Fed Ex	10/3/14 1125	Skull	10/3/14 1125

PACE Project No. 40104743
Receipt Temp = 0.2 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 08/14/06

C019a(27Jun2006)

ORIGINAL

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City, MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Pontier, Stantec
Sampled By (Sign):	D. Smith, GLEC
PO #:	Regulatory Program:

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

40104743

Bottle Order # 35165

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO) (NO)
PRESERVATION (CODE)* A

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: See bottle order # 35165	# of jars								CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					Y/N											
					Pick Letter											
014	SS 1011-AT (15 CM)	9/18/14	1440	S		32		1-4oz Ag A						collected in lab: 10/2/14	1-4oz Ag A	
015	SS 1031-AT (15 CM)	9/18/14	1020	S		32										
016	SS 1033-AT (15 CM)	9/18/14	0855	S		32										
017	SS 1034-AT (15 CM)	9/18/14	0940	S		32										
018	SS 1002-AT (15 CM)	9/18/14	1615	S		32										
019	SS 1005-AT (15 CM)	9/18/14	1535	S		32										
020	SS 1041-AT (15 CM)	9/19/14	0840	S		32										
021	SS 1012-AT (15 CM)	9/19/14	1145	S		32								collected in lab: 10/2/14		
						TWW 10/2/14										

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Matthew W Larson	10/2/14 1500		
Fed Ex	10/3/14 1125	S Bell	10/3/14 1125

PACE Project No. 40104743

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Jacki Johnson - Fwd: Stantec Shipment of Sediment Samples

40104743

From: Tod Noltemeyer
To: WI Sample Receiving
Date: 10/2/2014 2:54 PM
Subject: Fwd: Stantec Shipment of Sediment Samples
CC: Johnson, Jacki; Suchyta, Kimberly
Attachments: pace stantec coc_TOC and Grain Size.pdf

GLEC samples arriving in GB tomorrow.

Project Manager
Pace Analytical - WI
(608) 232-3300

Tod.Noltemeyer@pacelabs.com

>>> Dennis McCauley <dmccauley@glec.com> 10/2/2014 1:52 PM >>>
Hello Tod: Great lakes Environemntal Center, Inc. (GLEC) shipped two coolers today via FEDX to Pace containing sediment samples for the analysis of TOC and grain size. FEDX tracking numbers 9802 5316 0709 and 9802 5316 0710. The scanned COCs are also attached with this message. If you have any questions or require additional information, please contact either Mailee Garton at mgarton@glec.com or myself. Thanks, Dennis

--
Dennis J. McCauley
President/Principal Research Scientist
Great Lakes Environmental Center, Inc.
Phone: 231/941-2230
Cell: 231/649-3740
FAX: 231/941-2240
www.glec.com

This e-mail message and all attachments transmitted with it are for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit http://www.symanteccloud.com

---

Sample Condition Upon Receipt

Pace Analytical

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: **WO#: 40104743**

40104743

Client Name: Great lakes Environmental

Courier: ☑ Fed Ex ☐ UPS ☐ Client ☐ Pace Other:

Tracking #: 9802 5316 0710

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR-44 **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0.2 /Corr: 0.2 **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☑ yes ☐ no

Person examining contents:
Date: 10/3/14
Initials: SB

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. No analysis SB 10/3/14
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes ☑No	Initial when completed / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	14.
Trip Blank Present:	☐Yes ☑No ☐N/A	15.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JJ for IN **Date:** 10/6/14

F-GB-C-031-Rev.02 (28Oct2013) SCUR Form

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

January 30, 2015

Dennis McCauley
Great Lakes Environmental Center, Inc.
739 Hastings Street
Traverse City, MI 49686

RE: Project: 2290-00 STANTEC
Pace Project No.: 40108983

Dear Dennis McCauley:
Enclosed are the analytical results for sample(s) received by the laboratory on December 30, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
tod.noltemeyer@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Green Bay Certification IDs
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40108983001	**BKGD 100814 LUMB**	Tissue	10/08/14 16:00	12/30/14 10:30
40108983002	**CONTROL 100814 LUMB**	Tissue	11/06/14 09:50	12/30/14 10:30
40108983003	**10207 LUMB**	Tissue	11/06/14 12:30	12/30/14 10:30
40108983004	**10208 LUMB**	Tissue	11/06/14 14:25	12/30/14 10:30
40108983005	**10209 LUMB**	Tissue	11/06/14 15:19	12/30/14 10:30
40108983006	**10210 LUMB**	Tissue	11/07/14 18:21	12/30/14 10:30
40108983007	**10212 LUMB**	Tissue	11/07/14 18:35	12/30/14 10:30
40108983008	**10213 LUMB**	Tissue	11/07/14 13:56	12/30/14 10:30
40108983009	**10214 LUMB**	Tissue	11/07/14 14:18	12/30/14 10:30
40108983010	**BKGD 102214 LUMB**	Tissue	10/22/14 15:30	12/30/14 10:30
40108983011	**CONTROL 102214 LUMB**	Tissue	11/20/14 08:33	12/30/14 10:30
40108983012	**10215 LUMB**	Tissue	11/20/14 10:35	12/30/14 10:30
40108983013	**10216 LUMB**	Tissue	11/20/14 16:10	12/30/14 10:30
40108983014	**10217 LUMB**	Tissue	11/20/14 16:10	12/30/14 10:30
40108983015	**10218 LUMB**	Tissue	11/20/14 16:30	12/30/14 10:30
40108983016	**10219 LUMB**	Tissue	11/21/14 17:20	12/30/14 10:30
40108983017	**10220 LUMB**	Tissue	11/21/14 10:20	12/30/14 10:30
40108983018	**10221 LUMB**	Tissue	11/21/14 13:40	12/30/14 10:30
40108983019	**BKGD 111214 LUMB**	Tissue	11/12/14 15:35	12/30/14 10:30
40108983020	**CONTROL 111214 LUMB**	Tissue	12/11/14 12:00	12/30/14 10:30
40108983021	**10222 LUMB**	Tissue	12/11/14 12:05	12/30/14 10:30
40108983022	**10223 LUMB**	Tissue	12/11/14 14:00	12/30/14 10:30
40108983023	**10224 LUMB**	Tissue	12/11/14 15:40	12/30/14 10:30
40108983024	**10225 LUMB**	Tissue	12/11/14 16:05	12/30/14 10:30
40108983025	**10226 LUMB**	Tissue	12/11/14 16:30	12/30/14 10:30
40108983026	**10254 LUMB**	Tissue	12/12/14 09:00	12/30/14 10:30
40108983027	**10256 LUMB**	Tissue	12/12/14 12:30	12/30/14 10:30

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40108983001	**BKGD 100814 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983002	**CONTROL 100814 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983003	**10207 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983004	**10208 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983005	**10209 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983006	**10210 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983007	**10212 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983008	**10213 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983009	**10214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983010	**BKGD 102214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983011	**CONTROL 102214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983012	**10215 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983013	**10216 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983014	**10217 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983015	**10218 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Pace Lipid	ABF	1	PASI-G
40108983016	**10219 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983017	**10220 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983018	**10221 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983019	**BKGD 111214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983020	**CONTROL 111214 LUMB**	EPA 8082A	BDS	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983021	**10222 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983022	**10223 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983023	**10224 LUMB**	EPA 8082A	BLM	10	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983024	**10225 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983025	**10226 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983026	**10254 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G
40108983027	**10256 LUMB**	EPA 8082A	BLM	10	PASI-G
		EPA 6020	DS1	8	PASI-G
		EPA 8270 by SIM	ARO	20	PASI-G
		ASTM D2974-87	JAL	1	PASI-G
		Pace Lipid	ABF	1	PASI-G

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8082A**
Description: 8082A GCS PCB
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 8082A. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3541 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/25575

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: OEXT/25576

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH in Tissue
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3540 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: OEXT/25577

B: Analyte was detected in the associated method blank.
- BLANK for HBN 182974 [OEXT/255 (Lab ID: 1103376)
  - Indeno(1,2,3-cd)pyrene

QC Batch: OEXT/25578

B: Analyte was detected in the associated method blank.
- BLANK for HBN 182975 [OEXT/255 (Lab ID: 1103380)
  - Indeno(1,2,3-cd)pyrene

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/25577

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: OEXT/25578

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH in Tissue
Client: Great Lakes Environmental Center
Date: January 30, 2015

Additional Comments:

Batch Comments:

One compound above RDL in extraction blank; compound flagged in samples. Only projects that have been OK'd by clients are being reported.

- QC Batch: MSSV / 7553

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **ASTM D2974-87**
Description: Percent Moisture Reportable
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for ASTM D2974-87. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

PROJECT NARRATIVE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Method: **Pace Lipid**
Description: Lipid
Client: Great Lakes Environmental Center
Date: January 30, 2015

General Information:
27 samples were analyzed for Pace Lipid. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

A lipid duplicate was not performed for this batch due to insufficient sample volume.
- QC Batch: OEXT / 25590
- QC Batch: OEXT / 25591

This data package has been reviewed for quality and completeness and is approved for release.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 100814 LUMB **Lab ID: 40108983001** Collected: 10/08/14 16:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:22	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 14:22	877-09-8	
Decachlorobiphenyl (S)	81	%	55-130		1	01/05/15 13:14	01/21/15 14:22	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.21**	mg/kg	0.099	0.013	1	01/07/15 10:00	01/08/15 21:43	7440-38-2	
Barium	**11.5**	mg/kg	0.099	0.017	1	01/07/15 10:00	01/08/15 21:43	7440-39-3	
Cadmium	**0.037J**	mg/kg	0.099	0.0077	1	01/07/15 10:00	01/08/15 21:43	7440-43-9	
Chromium	**0.061J**	mg/kg	0.099	0.043	1	01/07/15 10:00	01/08/15 21:43	7440-47-3	
Copper	**2.0**	mg/kg	0.099	0.029	1	01/07/15 10:00	01/08/15 21:43	7440-50-8	
Lead	**0.062J**	mg/kg	0.099	0.011	1	01/07/15 10:00	01/08/15 21:43	7439-92-1	
Mercury	**<0.0076**	mg/kg	0.020	0.0076	1	01/07/15 10:00	01/08/15 21:43	7439-97-6	
Nickel	**0.065J**	mg/kg	0.099	0.030	1	01/07/15 10:00	01/08/15 21:43	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:11	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:11	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:11	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:11	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:11	120-12-7	
Benzo(a)anthracene	**1.4J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:11	56-55-3	
Benzo(a)pyrene	**21.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:11	50-32-8	
Benzo(b)fluoranthene	**1.4J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:11	205-99-2	
Benzo(g,h,i)perylene	**27.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:11	191-24-2	
Benzo(k)fluoranthene	**1.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:11	207-08-9	
Chrysene	**2.9J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:11	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:11	53-70-3	
Fluoranthene	**4.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:11	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:11	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.7**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:11	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:11	91-20-3	
Phenanthrene	**5.3**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:11	85-01-8	
Pyrene	**4.5**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:11	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:11	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 16:11	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 100814 LUMB **Lab ID: 40108983001** Collected: 10/08/14 16:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.0**	%	0.10	0.10	1		01/07/15 05:39		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.6**	%			1		01/08/15 10:39		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 100814 LUMB **Lab ID: 40108983002** Collected: 11/06/14 09:50 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:40	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	45-130		1	01/05/15 13:14	01/21/15 14:40	877-09-8	
Decachlorobiphenyl (S)	82	%	55-130		1	01/05/15 13:14	01/21/15 14:40	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.5**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/08/15 22:23	7440-38-2	
Barium	**15.2**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/08/15 22:23	7440-39-3	
Cadmium	**0.030J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/08/15 22:23	7440-43-9	
Chromium	**0.11**	mg/kg	0.092	0.040	1	01/07/15 10:00	01/08/15 22:23	7440-47-3	
Copper	**7.6**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/08/15 22:23	7440-50-8	
Lead	**0.13**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/08/15 22:23	7439-92-1	
Mercury	**0.0078J**	mg/kg	0.018	0.0071	1	01/07/15 10:00	01/08/15 22:23	7439-97-6	
Nickel	**0.085J**	mg/kg	0.092	0.028	1	01/07/15 10:00	01/08/15 22:23	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:28	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:28	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:28	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:28	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:28	120-12-7	
Benzo(a)anthracene	**1.1J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:28	56-55-3	
Benzo(a)pyrene	**29.4**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:28	50-32-8	
Benzo(b)fluoranthene	**1.9J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:28	205-99-2	
Benzo(g,h,i)perylene	**26.0**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:28	191-24-2	
Benzo(k)fluoranthene	**2.0J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:28	207-08-9	
Chrysene	**2.3J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:28	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:28	53-70-3	
Fluoranthene	**3.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:28	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.2**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:28	193-39-5	B
Naphthalene	**0.89J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:28	91-20-3	
Phenanthrene	**7.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:28	85-01-8	
Pyrene	**3.1J**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:28	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:10	01/19/15 16:28	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 100814 LUMB **Lab ID: 40108983002** Collected: 11/06/14 09:50 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.4**	%	0.10	0.10	1		01/07/15 05:39		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.9**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10207 LUMB **Lab ID: 40108983003** Collected: 11/06/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	12672-29-6	
PCB-1254 (Aroclor 1254)	**20.2J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11097-69-1	
PCB-1260 (Aroclor 1260)	**26.2**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	11096-82-5	
PCB, Total	**46.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 14:58	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	85	%	45-130		1	01/05/15 13:14	01/21/15 14:58	877-09-8	
Decachlorobiphenyl (S)	90	%	55-130		1	01/05/15 13:14	01/21/15 14:58	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.5**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 22:36	7440-38-2	
Barium	**22.6**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 22:36	7440-39-3	
Cadmium	**0.041J**	mg/kg	0.097	0.0076	1	01/07/15 10:00	01/08/15 22:36	7440-43-9	
Chromium	**0.31**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 22:36	7440-47-3	
Copper	**9.4**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 22:36	7440-50-8	
Lead	**0.50**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 22:36	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.019	0.0075	1	01/07/15 10:00	01/08/15 22:36	7439-97-6	
Nickel	**0.25**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 22:36	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:45	90-12-0	
2-Methylnaphthalene	**2.7J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:45	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 16:45	83-32-9	
Acenaphthylene	**2.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:45	208-96-8	
Anthracene	**6.7**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 16:45	120-12-7	
Benzo(a)anthracene	**10.9**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 16:45	56-55-3	
Benzo(a)pyrene	**36.9**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 16:45	50-32-8	
Benzo(b)fluoranthene	**5.3**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 16:45	205-99-2	
Benzo(g,h,i)perylene	**18.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 16:45	191-24-2	
Benzo(k)fluoranthene	**7.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 16:45	207-08-9	
Chrysene	**7.3**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 16:45	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 16:45	53-70-3	
Fluoranthene	**13.6**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 16:45	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 16:45	86-73-7	
Indeno(1,2,3-cd)pyrene	**18.1**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 16:45	193-39-5	B
Naphthalene	**6.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 16:45	91-20-3	
Phenanthrene	**8.4**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 16:45	85-01-8	
Pyrene	**12.4**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 16:45	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 16:45	321-60-8	
Terphenyl-d14 (S)	96	%	51-130		2	01/06/15 13:10	01/19/15 16:45	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10207 LUMB **Lab ID: 40108983003** Collected: 11/06/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.9**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10208 LUMB **Lab ID: 40108983004** Collected: 11/06/14 14:25 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	12672-29-6	
PCB-1254 (Aroclor 1254)	**14.4J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11097-69-1	
PCB-1260 (Aroclor 1260)	**14.9J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	11096-82-5	
PCB, Total	**29.3**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:16	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	45-130		1	01/05/15 13:14	01/21/15 15:16	877-09-8	
Decachlorobiphenyl (S)	86	%	55-130		1	01/05/15 13:14	01/21/15 15:16	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.0**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 22:42	7440-38-2	
Barium	**15.8**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 22:42	7440-39-3	
Cadmium	**0.033J**	mg/kg	0.097	0.0075	1	01/07/15 10:00	01/08/15 22:42	7440-43-9	
Chromium	**0.30**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 22:42	7440-47-3	
Copper	**7.1**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 22:42	7440-50-8	
Lead	**0.24**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 22:42	7439-92-1	
Mercury	**0.0086J**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 22:42	7439-97-6	
Nickel	**0.28**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 22:42	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:03	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:03	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:03	83-32-9	
Acenaphthylene	**2.2J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:03	208-96-8	
Anthracene	**7.9**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:03	120-12-7	
Benzo(a)anthracene	**33.2**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:03	56-55-3	
Benzo(a)pyrene	**45.9**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:03	50-32-8	
Benzo(b)fluoranthene	**27.6**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:03	205-99-2	
Benzo(g,h,i)perylene	**16.2**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:03	191-24-2	
Benzo(k)fluoranthene	**39.6**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:03	207-08-9	
Chrysene	**39.9**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:03	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:03	53-70-3	
Fluoranthene	**67.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:03	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:03	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:03	193-39-5	B
Naphthalene	**1.5J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:03	91-20-3	
Phenanthrene	**8.2**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:03	85-01-8	
Pyrene	**62.4**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:03	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	78	%	59-130		2	01/06/15 13:10	01/19/15 17:03	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 17:03	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10208 LUMB **Lab ID: 40108983004** Collected: 11/06/14 14:25 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.7**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10209 LUMB **Lab ID: 40108983005** Collected: 11/06/14 15:19 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	12672-29-6	
PCB-1254 (Aroclor 1254)	**31.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11097-69-1	
PCB-1260 (Aroclor 1260)	**55.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	11096-82-5	
PCB, Total	**87.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:33	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	80	%	45-130		1	01/05/15 13:14	01/21/15 15:33	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 15:33	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.75**	mg/kg	0.091	0.012	1	01/07/15 10:00	01/08/15 22:49	7440-38-2	
Barium	**21.5**	mg/kg	0.091	0.015	1	01/07/15 10:00	01/08/15 22:49	7440-39-3	
Cadmium	**0.041J**	mg/kg	0.091	0.0071	1	01/07/15 10:00	01/08/15 22:49	7440-43-9	
Chromium	**0.37**	mg/kg	0.091	0.039	1	01/07/15 10:00	01/08/15 22:49	7440-47-3	
Copper	**8.1**	mg/kg	0.091	0.026	1	01/07/15 10:00	01/08/15 22:49	7440-50-8	
Lead	**0.46**	mg/kg	0.091	0.010	1	01/07/15 10:00	01/08/15 22:49	7439-92-1	
Mercury	**0.0075J**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/08/15 22:49	7439-97-6	
Nickel	**0.29**	mg/kg	0.091	0.027	1	01/07/15 10:00	01/08/15 22:49	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:20	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:20	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:20	83-32-9	
Acenaphthylene	**5.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:20	208-96-8	
Anthracene	**14.4**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:20	120-12-7	
Benzo(a)anthracene	**24.9**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:20	56-55-3	
Benzo(a)pyrene	**76.1**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:20	50-32-8	
Benzo(b)fluoranthene	**23.6**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:20	205-99-2	
Benzo(g,h,i)perylene	**19.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:20	191-24-2	
Benzo(k)fluoranthene	**40.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:20	207-08-9	
Chrysene	**36.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:20	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:20	53-70-3	
Fluoranthene	**45.8**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:20	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:20	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:20	193-39-5	B
Naphthalene	**2.1J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:20	91-20-3	
Phenanthrene	**8.7**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:20	85-01-8	
Pyrene	**45.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:20	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	59-130		2	01/06/15 13:10	01/19/15 17:20	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 17:20	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10209 LUMB **Lab ID: 40108983005** Collected: 11/06/14 15:19 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.1**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10210 LUMB **Lab ID: 40108983006** Collected: 11/07/14 18:21 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	12672-29-6	
PCB-1254 (Aroclor 1254)	**19.3J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11097-69-1	
PCB-1260 (Aroclor 1260)	**31.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	11096-82-5	
PCB, Total	**50.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 15:51	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 15:51	877-09-8	
Decachlorobiphenyl (S)	82	%	55-130		1	01/05/15 13:14	01/21/15 15:51	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.66**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/08/15 22:55	7440-38-2	
Barium	**33.0**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/08/15 22:55	7440-39-3	
Cadmium	**0.034J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/08/15 22:55	7440-43-9	
Chromium	**0.39**	mg/kg	0.092	0.039	1	01/07/15 10:00	01/08/15 22:55	7440-47-3	
Copper	**8.6**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/08/15 22:55	7440-50-8	
Lead	**0.42**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/08/15 22:55	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/08/15 22:55	7439-97-6	
Nickel	**0.28**	mg/kg	0.092	0.027	1	01/07/15 10:00	01/08/15 22:55	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**2.5J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:37	90-12-0	
2-Methylnaphthalene	**3.2J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:37	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:37	83-32-9	
Acenaphthylene	**3.7**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:37	208-96-8	
Anthracene	**8.7**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:37	120-12-7	
Benzo(a)anthracene	**9.3**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:37	56-55-3	
Benzo(a)pyrene	**47.6**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:37	50-32-8	
Benzo(b)fluoranthene	**8.2**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:37	205-99-2	
Benzo(g,h,i)perylene	**20.8**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:37	191-24-2	
Benzo(k)fluoranthene	**13.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:37	207-08-9	
Chrysene	**10.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:37	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:37	53-70-3	
Fluoranthene	**12.0**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:37	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.0**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:37	193-39-5	B
Naphthalene	**4.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:37	91-20-3	
Phenanthrene	**6.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:37	85-01-8	
Pyrene	**11.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	81	%	59-130		2	01/06/15 13:10	01/19/15 17:37	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:10	01/19/15 17:37	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10210 LUMB **Lab ID: 40108983006** Collected: 11/07/14 18:21 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.6**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10212 LUMB **Lab ID: 40108983007** Collected: 11/07/14 18:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	12672-29-6	
PCB-1254 (Aroclor 1254)	**13.9J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11097-69-1	
PCB-1260 (Aroclor 1260)	**28.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	11096-82-5	
PCB, Total	**41.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:09	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	69	%	45-130		1	01/05/15 13:14	01/21/15 16:09	877-09-8	
Decachlorobiphenyl (S)	69	%	55-130		1	01/05/15 13:14	01/21/15 16:09	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.69**	mg/kg	0.097	0.013	1	01/07/15 10:00	01/08/15 23:02	7440-38-2	
Barium	**29.7**	mg/kg	0.097	0.016	1	01/07/15 10:00	01/08/15 23:02	7440-39-3	
Cadmium	**0.027J**	mg/kg	0.097	0.0075	1	01/07/15 10:00	01/08/15 23:02	7440-43-9	
Chromium	**0.22**	mg/kg	0.097	0.042	1	01/07/15 10:00	01/08/15 23:02	7440-47-3	
Copper	**6.8**	mg/kg	0.097	0.028	1	01/07/15 10:00	01/08/15 23:02	7440-50-8	
Lead	**0.26**	mg/kg	0.097	0.011	1	01/07/15 10:00	01/08/15 23:02	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:02	7439-97-6	
Nickel	**0.17**	mg/kg	0.097	0.029	1	01/07/15 10:00	01/08/15 23:02	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:54	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:54	91-57-6	
Acenaphthene	**0.75J**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 17:54	83-32-9	
Acenaphthylene	**20.1**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:54	208-96-8	
Anthracene	**39.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 17:54	120-12-7	
Benzo(a)anthracene	**53.5**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 17:54	56-55-3	
Benzo(a)pyrene	**70.5**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 17:54	50-32-8	
Benzo(b)fluoranthene	**60.1**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 17:54	205-99-2	
Benzo(g,h,i)perylene	**14.6**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 17:54	191-24-2	
Benzo(k)fluoranthene	**64.8**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 17:54	207-08-9	
Chrysene	**71.7**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 17:54	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 17:54	53-70-3	
Fluoranthene	**94.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 17:54	206-44-0	
Fluorene	**2.2J**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 17:54	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.5**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 17:54	193-39-5	B
Naphthalene	**2.0J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 17:54	91-20-3	
Phenanthrene	**15.2**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 17:54	85-01-8	
Pyrene	**85.7**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 17:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	83	%	59-130		2	01/06/15 13:10	01/19/15 17:54	321-60-8	
Terphenyl-d14 (S)	100	%	51-130		2	01/06/15 13:10	01/19/15 17:54	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10212 LUMB **Lab ID: 40108983007** Collected: 11/07/14 18:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.1**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10213 LUMB **Lab ID: 40108983008** Collected: 11/07/14 13:56 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	12672-29-6	
PCB-1254 (Aroclor 1254)	**16.6J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11097-69-1	
PCB-1260 (Aroclor 1260)	**27.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	11096-82-5	
PCB, Total	**43.7**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:27	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	93	%	45-130		1	01/05/15 13:14	01/21/15 16:27	877-09-8	
Decachlorobiphenyl (S)	92	%	55-130		1	01/05/15 13:14	01/21/15 16:27	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.86**	mg/kg	0.089	0.012	1	01/07/15 10:00	01/08/15 23:08	7440-38-2	
Barium	**49.5**	mg/kg	0.089	0.015	1	01/07/15 10:00	01/08/15 23:08	7440-39-3	
Cadmium	**0.043J**	mg/kg	0.089	0.0070	1	01/07/15 10:00	01/08/15 23:08	7440-43-9	
Chromium	**0.23**	mg/kg	0.089	0.038	1	01/07/15 10:00	01/08/15 23:08	7440-47-3	
Copper	**12.4**	mg/kg	0.089	0.026	1	01/07/15 10:00	01/08/15 23:08	7440-50-8	
Lead	**0.27**	mg/kg	0.089	0.0098	1	01/07/15 10:00	01/08/15 23:08	7439-92-1	
Mercury	**<0.0069**	mg/kg	0.018	0.0069	1	01/07/15 10:00	01/08/15 23:08	7439-97-6	
Nickel	**0.19**	mg/kg	0.089	0.027	1	01/07/15 10:00	01/08/15 23:08	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:12	90-12-0	
2-Methylnaphthalene	**2.0J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:12	91-57-6	
Acenaphthene	**2.0J**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 18:12	83-32-9	
Acenaphthylene	**18.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:12	208-96-8	
Anthracene	**53.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:12	120-12-7	
Benzo(a)anthracene	**51.7**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 18:12	56-55-3	
Benzo(a)pyrene	**82.5**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 18:12	50-32-8	
Benzo(b)fluoranthene	**53.8**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 18:12	205-99-2	
Benzo(g,h,i)perylene	**24.2**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 18:12	191-24-2	
Benzo(k)fluoranthene	**77.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:12	207-08-9	
Chrysene	**70.4**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 18:12	218-01-9	
Dibenz(a,h)anthracene	**4.6J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 18:12	53-70-3	
Fluoranthene	**69.4**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 18:12	206-44-0	
Fluorene	**3.5**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 18:12	86-73-7	
Indeno(1,2,3-cd)pyrene	**33.5**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:12	193-39-5	B
Naphthalene	**3.0J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 18:12	91-20-3	
Phenanthrene	**27.8**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 18:12	85-01-8	
Pyrene	**57.3**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 18:12	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	75	%	59-130		2	01/06/15 13:10	01/19/15 18:12	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 18:12	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10213 LUMB **Lab ID: 40108983008** Collected: 11/07/14 13:56 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.6**	%	0.10	0.10	1		01/07/15 05:40		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.8**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10214 LUMB **Lab ID: 40108983009** Collected: 11/07/14 14:18 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	12672-29-6	
PCB-1254 (Aroclor 1254)	**37.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11097-69-1	
PCB-1260 (Aroclor 1260)	**73.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	11096-82-5	
PCB, Total	**111**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 16:45	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 16:45	877-09-8	
Decachlorobiphenyl (S)	87	%	55-130		1	01/05/15 13:14	01/21/15 16:45	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.094	0.013	1	01/07/15 10:00	01/08/15 23:15	7440-38-2	
Barium	**33.3**	mg/kg	0.094	0.016	1	01/07/15 10:00	01/08/15 23:15	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.094	0.0074	1	01/07/15 10:00	01/08/15 23:15	7440-43-9	
Chromium	**0.36**	mg/kg	0.094	0.041	1	01/07/15 10:00	01/08/15 23:15	7440-47-3	
Copper	**12.6**	mg/kg	0.094	0.027	1	01/07/15 10:00	01/08/15 23:15	7440-50-8	
Lead	**0.48**	mg/kg	0.094	0.010	1	01/07/15 10:00	01/08/15 23:15	7439-92-1	
Mercury	**0.0081J**	mg/kg	0.019	0.0072	1	01/07/15 10:00	01/08/15 23:15	7439-97-6	
Nickel	**0.30**	mg/kg	0.094	0.028	1	01/07/15 10:00	01/08/15 23:15	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<6.0**	ug/kg	13.3	6.0	8	01/06/15 13:10	01/28/15 10:31	90-12-0	
2-Methylnaphthalene	**<5.7**	ug/kg	13.3	5.7	8	01/06/15 13:10	01/28/15 10:31	91-57-6	
Acenaphthene	**<2.2**	ug/kg	13.3	2.2	8	01/06/15 13:10	01/28/15 10:31	83-32-9	
Acenaphthylene	**22.0**	ug/kg	13.3	4.8	8	01/06/15 13:10	01/28/15 10:31	208-96-8	
Anthracene	**39.5**	ug/kg	13.3	5.9	8	01/06/15 13:10	01/28/15 10:31	120-12-7	
Benzo(a)anthracene	**50.4**	ug/kg	13.3	2.7	8	01/06/15 13:10	01/28/15 10:31	56-55-3	
Benzo(a)pyrene	**52.2**	ug/kg	13.3	3.7	8	01/06/15 13:10	01/28/15 10:31	50-32-8	
Benzo(b)fluoranthene	**54.2**	ug/kg	13.3	2.3	8	01/06/15 13:10	01/28/15 10:31	205-99-2	
Benzo(g,h,i)perylene	**34.4**	ug/kg	13.3	4.4	8	01/06/15 13:10	01/28/15 10:31	191-24-2	
Benzo(k)fluoranthene	**60.0**	ug/kg	13.3	4.9	8	01/06/15 13:10	01/28/15 10:31	207-08-9	
Chrysene	**81.6**	ug/kg	13.3	3.4	8	01/06/15 13:10	01/28/15 10:31	218-01-9	
Dibenz(a,h)anthracene	**6.3J**	ug/kg	26.7	3.6	8	01/06/15 13:10	01/28/15 10:31	53-70-3	
Fluoranthene	**111**	ug/kg	13.3	3.5	8	01/06/15 13:10	01/28/15 10:31	206-44-0	
Fluorene	**<7.4**	ug/kg	13.3	7.4	8	01/06/15 13:10	01/28/15 10:31	86-73-7	
Indeno(1,2,3-cd)pyrene	**31.5**	ug/kg	13.3	5.8	8	01/06/15 13:10	01/28/15 10:31	193-39-5	B
Naphthalene	**12.2J**	ug/kg	13.3	3.1	8	01/06/15 13:10	01/28/15 10:31	91-20-3	
Phenanthrene	**19.8**	ug/kg	13.3	1.7	8	01/06/15 13:10	01/28/15 10:31	85-01-8	
Pyrene	**97.7**	ug/kg	13.3	2.1	8	01/06/15 13:10	01/28/15 10:31	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%	59-130		8	01/06/15 13:10	01/28/15 10:31	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		8	01/06/15 13:10	01/28/15 10:31	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10214 LUMB **Lab ID: 40108983009** Collected: 11/07/14 14:18 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.3**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.1**	%			1		01/08/15 10:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 102214 LUMB **Lab ID: 40108983010** Collected: 10/22/14 15:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:38	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	94	%	45-130		1	01/05/15 13:14	01/21/15 17:38	877-09-8	
Decachlorobiphenyl (S)	94	%	55-130		1	01/05/15 13:14	01/21/15 17:38	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.19**	mg/kg	0.098	0.013	1	01/07/15 10:00	01/08/15 23:21	7440-38-2	
Barium	**9.6**	mg/kg	0.098	0.016	1	01/07/15 10:00	01/08/15 23:21	7440-39-3	
Cadmium	**0.032J**	mg/kg	0.098	0.0076	1	01/07/15 10:00	01/08/15 23:21	7440-43-9	
Chromium	**0.067J**	mg/kg	0.098	0.042	1	01/07/15 10:00	01/08/15 23:21	7440-47-3	
Copper	**1.1**	mg/kg	0.098	0.028	1	01/07/15 10:00	01/08/15 23:21	7440-50-8	
Lead	**0.061J**	mg/kg	0.098	0.011	1	01/07/15 10:00	01/08/15 23:21	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.020	0.0075	1	01/07/15 10:00	01/08/15 23:21	7439-97-6	
Nickel	**0.066J**	mg/kg	0.098	0.029	1	01/07/15 10:00	01/08/15 23:21	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:46	90-12-0	
2-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:46	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 18:46	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:46	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 18:46	120-12-7	
Benzo(a)anthracene	**1.3J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 18:46	56-55-3	
Benzo(a)pyrene	**19.6**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 18:46	50-32-8	
Benzo(b)fluoranthene	**1.1J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 18:46	205-99-2	
Benzo(g,h,i)perylene	**30.8**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 18:46	191-24-2	
Benzo(k)fluoranthene	**1.2J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 18:46	207-08-9	
Chrysene	**3.0J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 18:46	218-01-9	
Dibenz(a,h)anthracene	**1.4J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 18:46	53-70-3	
Fluoranthene	**4.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 18:46	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 18:46	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.1**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 18:46	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 18:46	91-20-3	
Phenanthrene	**4.5**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 18:46	85-01-8	
Pyrene	**4.6**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 18:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	85	%	59-130		2	01/06/15 13:10	01/19/15 18:46	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 18:46	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 102214 LUMB **Lab ID: 40108983010** Collected: 10/22/14 15:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.2**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.7**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 102214 LUMB **Lab ID: 40108983011** Collected: 11/20/14 08:33 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 17:56	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	96	%	45-130		1	01/05/15 13:14	01/21/15 17:56	877-09-8	
Decachlorobiphenyl (S)	95	%	55-130		1	01/05/15 13:14	01/21/15 17:56	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.096	0.013	1	01/07/15 10:00	01/08/15 23:41	7440-38-2	
Barium	**10.7**	mg/kg	0.096	0.016	1	01/07/15 10:00	01/08/15 23:41	7440-39-3	
Cadmium	**0.021J**	mg/kg	0.096	0.0075	1	01/07/15 10:00	01/08/15 23:41	7440-43-9	
Chromium	**0.13**	mg/kg	0.096	0.041	1	01/07/15 10:00	01/08/15 23:41	7440-47-3	
Copper	**3.6**	mg/kg	0.096	0.028	1	01/07/15 10:00	01/08/15 23:41	7440-50-8	
Lead	**0.087J**	mg/kg	0.096	0.010	1	01/07/15 10:00	01/08/15 23:41	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:41	7439-97-6	
Nickel	**0.090J**	mg/kg	0.096	0.029	1	01/07/15 10:00	01/08/15 23:41	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:04	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:04	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 19:04	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:04	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:04	120-12-7	
Benzo(a)anthracene	**0.91J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 19:04	56-55-3	
Benzo(a)pyrene	**16.1**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 19:04	50-32-8	
Benzo(b)fluoranthene	**1.2J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 19:04	205-99-2	
Benzo(g,h,i)perylene	**20.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 19:04	191-24-2	
Benzo(k)fluoranthene	**1.6J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:04	207-08-9	
Chrysene	**1.5J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 19:04	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 19:04	53-70-3	
Fluoranthene	**2.5J**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 19:04	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 19:04	86-73-7	
Indeno(1,2,3-cd)pyrene	**18.2**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:04	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 19:04	91-20-3	
Phenanthrene	**5.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 19:04	85-01-8	
Pyrene	**2.3J**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 19:04	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	76	%	59-130		2	01/06/15 13:10	01/19/15 19:04	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 19:04	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 102214 LUMB **Lab ID: 40108983011** Collected: 11/20/14 08:33 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10215 LUMB **Lab ID: 40108983012** Collected: 11/20/14 10:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	12672-29-6	
PCB-1254 (Aroclor 1254)	**15.5J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11097-69-1	
PCB-1260 (Aroclor 1260)	**19.3J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	11096-82-5	
PCB, Total	**34.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:14	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	93	%	45-130		1	01/05/15 13:14	01/21/15 18:14	877-09-8	
Decachlorobiphenyl (S)	97	%	55-130		1	01/05/15 13:14	01/21/15 18:14	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.82**	mg/kg	0.098	0.013	1	01/07/15 10:00	01/08/15 23:48	7440-38-2	
Barium	**16.5**	mg/kg	0.098	0.016	1	01/07/15 10:00	01/08/15 23:48	7440-39-3	
Cadmium	**0.031J**	mg/kg	0.098	0.0077	1	01/07/15 10:00	01/08/15 23:48	7440-43-9	
Chromium	**0.29**	mg/kg	0.098	0.042	1	01/07/15 10:00	01/08/15 23:48	7440-47-3	
Copper	**5.2**	mg/kg	0.098	0.028	1	01/07/15 10:00	01/08/15 23:48	7440-50-8	
Lead	**0.26**	mg/kg	0.098	0.011	1	01/07/15 10:00	01/08/15 23:48	7439-92-1	
Mercury	**<0.0075**	mg/kg	0.020	0.0075	1	01/07/15 10:00	01/08/15 23:48	7439-97-6	
Nickel	**0.25**	mg/kg	0.098	0.029	1	01/07/15 10:00	01/08/15 23:48	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<3.0**	ug/kg	6.7	3.0	4	01/06/15 13:10	01/28/15 10:48	90-12-0	
2-Methylnaphthalene	**<2.8**	ug/kg	6.7	2.8	4	01/06/15 13:10	01/28/15 10:48	91-57-6	
Acenaphthene	**<1.1**	ug/kg	6.7	1.1	4	01/06/15 13:10	01/28/15 10:48	83-32-9	
Acenaphthylene	**6.0J**	ug/kg	6.7	2.4	4	01/06/15 13:10	01/28/15 10:48	208-96-8	
Anthracene	**13.3**	ug/kg	6.7	3.0	4	01/06/15 13:10	01/28/15 10:48	120-12-7	
Benzo(a)anthracene	**42.1**	ug/kg	6.7	1.4	4	01/06/15 13:10	01/28/15 10:48	56-55-3	
Benzo(a)pyrene	**56.4**	ug/kg	6.7	1.9	4	01/06/15 13:10	01/28/15 10:48	50-32-8	
Benzo(b)fluoranthene	**46.2**	ug/kg	6.7	1.2	4	01/06/15 13:10	01/28/15 10:48	205-99-2	
Benzo(g,h,i)perylene	**31.1**	ug/kg	6.7	2.2	4	01/06/15 13:10	01/28/15 10:48	191-24-2	
Benzo(k)fluoranthene	**54.0**	ug/kg	6.7	2.5	4	01/06/15 13:10	01/28/15 10:48	207-08-9	
Chrysene	**56.3**	ug/kg	6.7	1.7	4	01/06/15 13:10	01/28/15 10:48	218-01-9	
Dibenz(a,h)anthracene	**3.6J**	ug/kg	13.3	1.8	4	01/06/15 13:10	01/28/15 10:48	53-70-3	
Fluoranthene	**84.1**	ug/kg	6.7	1.7	4	01/06/15 13:10	01/28/15 10:48	206-44-0	
Fluorene	**<3.7**	ug/kg	6.7	3.7	4	01/06/15 13:10	01/28/15 10:48	86-73-7	
Indeno(1,2,3-cd)pyrene	**14.0**	ug/kg	6.7	2.9	4	01/06/15 13:10	01/28/15 10:48	193-39-5	B
Naphthalene	**4.0J**	ug/kg	6.7	1.5	4	01/06/15 13:10	01/28/15 10:48	91-20-3	
Phenanthrene	**9.0**	ug/kg	6.7	0.84	4	01/06/15 13:10	01/28/15 10:48	85-01-8	
Pyrene	**84.4**	ug/kg	6.7	1.0	4	01/06/15 13:10	01/28/15 10:48	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	98	%	59-130		4	01/06/15 13:10	01/28/15 10:48	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		4	01/06/15 13:10	01/28/15 10:48	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10215 LUMB **Lab ID: 40108983012** Collected: 11/20/14 10:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10216 LUMB **Lab ID: 40108983013** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	12672-29-6	
PCB-1254 (Aroclor 1254)	**53.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11097-69-1	
PCB-1260 (Aroclor 1260)	**75.4**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	11096-82-5	
PCB, Total	**129**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:32	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	99	%	45-130		1	01/05/15 13:14	01/21/15 18:32	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 13:14	01/21/15 18:32	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.43**	mg/kg	0.096	0.013	1	01/07/15 10:00	01/08/15 23:54	7440-38-2	
Barium	**13.1**	mg/kg	0.096	0.016	1	01/07/15 10:00	01/08/15 23:54	7440-39-3	
Cadmium	**0.043J**	mg/kg	0.096	0.0075	1	01/07/15 10:00	01/08/15 23:54	7440-43-9	
Chromium	**0.46**	mg/kg	0.096	0.041	1	01/07/15 10:00	01/08/15 23:54	7440-47-3	
Copper	**4.7**	mg/kg	0.096	0.028	1	01/07/15 10:00	01/08/15 23:54	7440-50-8	
Lead	**0.34**	mg/kg	0.096	0.011	1	01/07/15 10:00	01/08/15 23:54	7439-92-1	
Mercury	**<0.0074**	mg/kg	0.019	0.0074	1	01/07/15 10:00	01/08/15 23:54	7439-97-6	
Nickel	**0.28**	mg/kg	0.096	0.029	1	01/07/15 10:00	01/08/15 23:54	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:38	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:38	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 19:38	83-32-9	
Acenaphthylene	**3.3J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:38	208-96-8	
Anthracene	**6.2**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 19:38	120-12-7	
Benzo(a)anthracene	**18.6**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 19:38	56-55-3	
Benzo(a)pyrene	**54.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 19:38	50-32-8	
Benzo(b)fluoranthene	**43.8**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 19:38	205-99-2	
Benzo(g,h,i)perylene	**20.0**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 19:38	191-24-2	
Benzo(k)fluoranthene	**32.9**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 19:38	207-08-9	
Chrysene	**34.1**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 19:38	218-01-9	
Dibenz(a,h)anthracene	**1.7J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 19:38	53-70-3	
Fluoranthene	**39.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 19:38	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 19:38	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.7**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 19:38	193-39-5	B
Naphthalene	**2.2J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 19:38	91-20-3	
Phenanthrene	**11.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 19:38	85-01-8	
Pyrene	**36.5**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 19:38	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	87	%	59-130		2	01/06/15 13:10	01/19/15 19:38	321-60-8	
Terphenyl-d14 (S)	103	%	51-130		2	01/06/15 13:10	01/19/15 19:38	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10216 LUMB **Lab ID: 40108983013** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.9**	%	0.10	0.10	1		01/07/15 05:41		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10217 LUMB **Lab ID: 40108983014** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	12672-29-6	
PCB-1254 (Aroclor 1254)	**15.8J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11097-69-1	
PCB-1260 (Aroclor 1260)	**18.1J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	11096-82-5	
PCB, Total	**33.9**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 18:49	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	83	%	45-130		1	01/05/15 13:14	01/21/15 18:49	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 18:49	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.86**	mg/kg	0.092	0.012	1	01/07/15 10:00	01/09/15 00:01	7440-38-2	
Barium	**15.2**	mg/kg	0.092	0.015	1	01/07/15 10:00	01/09/15 00:01	7440-39-3	
Cadmium	**0.026J**	mg/kg	0.092	0.0072	1	01/07/15 10:00	01/09/15 00:01	7440-43-9	
Chromium	**0.29**	mg/kg	0.092	0.039	1	01/07/15 10:00	01/09/15 00:01	7440-47-3	
Copper	**4.5**	mg/kg	0.092	0.026	1	01/07/15 10:00	01/09/15 00:01	7440-50-8	
Lead	**0.26**	mg/kg	0.092	0.010	1	01/07/15 10:00	01/09/15 00:01	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/09/15 00:01	7439-97-6	
Nickel	**0.22**	mg/kg	0.092	0.027	1	01/07/15 10:00	01/09/15 00:01	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<6.0**	ug/kg	13.3	6.0	8	01/06/15 13:10	01/28/15 11:06	90-12-0	
2-Methylnaphthalene	**<5.7**	ug/kg	13.3	5.7	8	01/06/15 13:10	01/28/15 11:06	91-57-6	
Acenaphthene	**<2.2**	ug/kg	13.3	2.2	8	01/06/15 13:10	01/28/15 11:06	83-32-9	
Acenaphthylene	**8.0J**	ug/kg	13.3	4.8	8	01/06/15 13:10	01/28/15 11:06	208-96-8	
Anthracene	**16.8**	ug/kg	13.3	5.9	8	01/06/15 13:10	01/28/15 11:06	120-12-7	
Benzo(a)anthracene	**45.5**	ug/kg	13.3	2.7	8	01/06/15 13:10	01/28/15 11:06	56-55-3	
Benzo(a)pyrene	**40.4**	ug/kg	13.3	3.7	8	01/06/15 13:10	01/28/15 11:06	50-32-8	
Benzo(b)fluoranthene	**60.1**	ug/kg	13.3	2.3	8	01/06/15 13:10	01/28/15 11:06	205-99-2	
Benzo(g,h,i)perylene	**33.8**	ug/kg	13.3	4.4	8	01/06/15 13:10	01/28/15 11:06	191-24-2	
Benzo(k)fluoranthene	**59.8**	ug/kg	13.3	4.9	8	01/06/15 13:10	01/28/15 11:06	207-08-9	
Chrysene	**69.6**	ug/kg	13.3	3.4	8	01/06/15 13:10	01/28/15 11:06	218-01-9	
Dibenz(a,h)anthracene	**4.0J**	ug/kg	26.7	3.6	8	01/06/15 13:10	01/28/15 11:06	53-70-3	
Fluoranthene	**108**	ug/kg	13.3	3.5	8	01/06/15 13:10	01/28/15 11:06	206-44-0	
Fluorene	**<7.4**	ug/kg	13.3	7.4	8	01/06/15 13:10	01/28/15 11:06	86-73-7	
Indeno(1,2,3-cd)pyrene	**17.2**	ug/kg	13.3	5.8	8	01/06/15 13:10	01/28/15 11:06	193-39-5	B
Naphthalene	**5.6J**	ug/kg	13.3	3.1	8	01/06/15 13:10	01/28/15 11:06	91-20-3	
Phenanthrene	**10.1J**	ug/kg	13.3	1.7	8	01/06/15 13:10	01/28/15 11:06	85-01-8	
Pyrene	**99.7**	ug/kg	13.3	2.1	8	01/06/15 13:10	01/28/15 11:06	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	99	%	59-130		8	01/06/15 13:10	01/28/15 11:06	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		8	01/06/15 13:10	01/28/15 11:06	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10217 LUMB **Lab ID: 40108983014** Collected: 11/20/14 16:10 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.0**	%	0.10	0.10	1		01/07/15 05:42		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:41		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10218 LUMB **Lab ID: 40108983015** Collected: 11/20/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	12672-29-6	
PCB-1254 (Aroclor 1254)	**65.6**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11097-69-1	
PCB-1260 (Aroclor 1260)	**105**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	11096-82-5	
PCB, Total	**171**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:07	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 13:14	01/21/15 19:07	877-09-8	
Decachlorobiphenyl (S)	84	%	55-130		1	01/05/15 13:14	01/21/15 19:07	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.44**	mg/kg	0.093	0.013	1	01/07/15 10:00	01/09/15 00:07	7440-38-2	
Barium	**15.2**	mg/kg	0.093	0.016	1	01/07/15 10:00	01/09/15 00:07	7440-39-3	
Cadmium	**0.062J**	mg/kg	0.093	0.0073	1	01/07/15 10:00	01/09/15 00:07	7440-43-9	
Chromium	**0.59**	mg/kg	0.093	0.040	1	01/07/15 10:00	01/09/15 00:07	7440-47-3	
Copper	**4.9**	mg/kg	0.093	0.027	1	01/07/15 10:00	01/09/15 00:07	7440-50-8	
Lead	**0.51**	mg/kg	0.093	0.010	1	01/07/15 10:00	01/09/15 00:07	7439-92-1	
Mercury	**<0.0072**	mg/kg	0.019	0.0072	1	01/07/15 10:00	01/09/15 00:07	7439-97-6	
Nickel	**0.35**	mg/kg	0.093	0.028	1	01/07/15 10:00	01/09/15 00:07	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<9.4**	ug/kg	20.8	9.4	12.5	01/06/15 13:10	01/28/15 11:23	90-12-0	
2-Methylnaphthalene	**<8.9**	ug/kg	20.8	8.9	12.5	01/06/15 13:10	01/28/15 11:23	91-57-6	
Acenaphthene	**<3.4**	ug/kg	20.8	3.4	12.5	01/06/15 13:10	01/28/15 11:23	83-32-9	
Acenaphthylene	**<7.6**	ug/kg	20.8	7.6	12.5	01/06/15 13:10	01/28/15 11:23	208-96-8	
Anthracene	**<9.3**	ug/kg	20.8	9.3	12.5	01/06/15 13:10	01/28/15 11:23	120-12-7	
Benzo(a)anthracene	**80.9**	ug/kg	20.8	4.2	12.5	01/06/15 13:10	01/28/15 11:23	56-55-3	
Benzo(a)pyrene	**45.3**	ug/kg	20.8	5.8	12.5	01/06/15 13:10	01/28/15 11:23	50-32-8	
Benzo(b)fluoranthene	**178**	ug/kg	20.8	3.6	12.5	01/06/15 13:10	01/28/15 11:23	205-99-2	
Benzo(g,h,i)perylene	**66.9**	ug/kg	20.8	6.9	12.5	01/06/15 13:10	01/28/15 11:23	191-24-2	
Benzo(k)fluoranthene	**122**	ug/kg	20.8	7.7	12.5	01/06/15 13:10	01/28/15 11:23	207-08-9	
Chrysene	**160**	ug/kg	20.8	5.3	12.5	01/06/15 13:10	01/28/15 11:23	218-01-9	
Dibenz(a,h)anthracene	**10.6J**	ug/kg	41.7	5.6	12.5	01/06/15 13:10	01/28/15 11:23	53-70-3	
Fluoranthene	**216**	ug/kg	20.8	5.4	12.5	01/06/15 13:10	01/28/15 11:23	206-44-0	
Fluorene	**<11.5**	ug/kg	20.8	11.5	12.5	01/06/15 13:10	01/28/15 11:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**48.2**	ug/kg	20.8	9.0	12.5	01/06/15 13:10	01/28/15 11:23	193-39-5	B
Naphthalene	**<4.8**	ug/kg	20.8	4.8	12.5	01/06/15 13:10	01/28/15 11:23	91-20-3	
Phenanthrene	**29.8**	ug/kg	20.8	2.6	12.5	01/06/15 13:10	01/28/15 11:23	85-01-8	
Pyrene	**237**	ug/kg	20.8	3.3	12.5	01/06/15 13:10	01/28/15 11:23	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		12.5	01/06/15 13:10	01/28/15 11:23	321-60-8	
Terphenyl-d14 (S)	84	%	51-130		12.5	01/06/15 13:10	01/28/15 11:23	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10218 LUMB **Lab ID: 40108983015** Collected: 11/20/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.5**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.7**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10219 LUMB **Lab ID: 40108983016** Collected: 11/21/14 17:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:25	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	100	%	45-130		1	01/05/15 13:14	01/21/15 19:25	877-09-8	
Decachlorobiphenyl (S)	102	%	55-130		1	01/05/15 13:14	01/21/15 19:25	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.37**	mg/kg	0.095	0.013	1	01/07/15 10:00	01/09/15 00:14	7440-38-2	
Barium	**13.1**	mg/kg	0.095	0.016	1	01/07/15 10:00	01/09/15 00:14	7440-39-3	
Cadmium	**0.020J**	mg/kg	0.095	0.0074	1	01/07/15 10:00	01/09/15 00:14	7440-43-9	
Chromium	**0.18**	mg/kg	0.095	0.041	1	01/07/15 10:00	01/09/15 00:14	7440-47-3	
Copper	**3.4**	mg/kg	0.095	0.027	1	01/07/15 10:00	01/09/15 00:14	7440-50-8	
Lead	**0.36**	mg/kg	0.095	0.010	1	01/07/15 10:00	01/09/15 00:14	7439-92-1	
Mercury	**<0.0073**	mg/kg	0.019	0.0073	1	01/07/15 10:00	01/09/15 00:14	7439-97-6	
Nickel	**0.19**	mg/kg	0.095	0.029	1	01/07/15 10:00	01/09/15 00:14	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:30	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:30	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 20:30	83-32-9	
Acenaphthylene	**5.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:30	208-96-8	
Anthracene	**9.4**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:30	120-12-7	
Benzo(a)anthracene	**18.5**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 20:30	56-55-3	
Benzo(a)pyrene	**40.8**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 20:30	50-32-8	
Benzo(b)fluoranthene	**21.7**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 20:30	205-99-2	
Benzo(g,h,i)perylene	**14.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 20:30	191-24-2	
Benzo(k)fluoranthene	**29.8**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:30	207-08-9	
Chrysene	**24.6**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 20:30	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 20:30	53-70-3	
Fluoranthene	**30.0**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 20:30	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 20:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.8**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:30	193-39-5	B
Naphthalene	**4.4**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 20:30	91-20-3	
Phenanthrene	**5.7**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 20:30	85-01-8	
Pyrene	**30.1**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 20:30	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	87	%	59-130		2	01/06/15 13:10	01/19/15 20:30	321-60-8	
Terphenyl-d14 (S)	101	%	51-130		2	01/06/15 13:10	01/19/15 20:30	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10219 LUMB **Lab ID: 40108983016** Collected: 11/21/14 17:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**94.1**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.87**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10220 LUMB **Lab ID: 40108983017** Collected: 11/21/14 10:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	12672-29-6	
PCB-1254 (Aroclor 1254)	**18.2J**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11097-69-1	
PCB-1260 (Aroclor 1260)	**25.8**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	11096-82-5	
PCB, Total	**44.0**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 19:43	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	97	%	45-130		1	01/05/15 13:14	01/21/15 19:43	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 13:14	01/21/15 19:43	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.70**	mg/kg	0.087	0.012	1	01/07/15 10:00	01/09/15 00:20	7440-38-2	
Barium	**17.5**	mg/kg	0.087	0.015	1	01/07/15 10:00	01/09/15 00:20	7440-39-3	
Cadmium	**0.027J**	mg/kg	0.087	0.0068	1	01/07/15 10:00	01/09/15 00:20	7440-43-9	
Chromium	**0.49**	mg/kg	0.087	0.037	1	01/07/15 10:00	01/09/15 00:20	7440-47-3	
Copper	**4.6**	mg/kg	0.087	0.025	1	01/07/15 10:00	01/09/15 00:20	7440-50-8	
Lead	**0.47**	mg/kg	0.087	0.0095	1	01/07/15 10:00	01/09/15 00:20	7439-92-1	
Mercury	**<0.0067**	mg/kg	0.017	0.0067	1	01/07/15 10:00	01/09/15 00:20	7439-97-6	
Nickel	**0.33**	mg/kg	0.087	0.026	1	01/07/15 10:00	01/09/15 00:20	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:47	90-12-0	
2-Methylnaphthalene	**1.8J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:47	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 20:47	83-32-9	
Acenaphthylene	**8.4**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:47	208-96-8	
Anthracene	**18.1**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 20:47	120-12-7	
Benzo(a)anthracene	**39.0**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 20:47	56-55-3	
Benzo(a)pyrene	**57.4**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 20:47	50-32-8	
Benzo(b)fluoranthene	**34.4**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 20:47	205-99-2	
Benzo(g,h,i)perylene	**19.7**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 20:47	191-24-2	
Benzo(k)fluoranthene	**46.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 20:47	207-08-9	
Chrysene	**52.5**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 20:47	218-01-9	
Dibenz(a,h)anthracene	**1.8J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 20:47	53-70-3	
Fluoranthene	**76.9**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 20:47	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 20:47	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.6**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 20:47	193-39-5	B
Naphthalene	**4.1**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 20:47	91-20-3	
Phenanthrene	**9.3**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 20:47	85-01-8	
Pyrene	**68.6**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 20:47	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:10	01/19/15 20:47	321-60-8	
Terphenyl-d14 (S)	97	%	51-130		2	01/06/15 13:10	01/19/15 20:47	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10220 LUMB **Lab ID: 40108983017** Collected: 11/21/14 10:20 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.2**	%	0.10	0.10	1		01/07/15 05:47		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10221 LUMB **Lab ID: 40108983018** Collected: 11/21/14 13:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:01	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 13:14	01/21/15 20:01	877-09-8	
Decachlorobiphenyl (S)	88	%	55-130		1	01/05/15 13:14	01/21/15 20:01	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.62**	mg/kg	0.091	0.012	1	01/07/15 10:00	01/09/15 00:27	7440-38-2	
Barium	**16.0**	mg/kg	0.091	0.015	1	01/07/15 10:00	01/09/15 00:27	7440-39-3	
Cadmium	**0.029J**	mg/kg	0.091	0.0071	1	01/07/15 10:00	01/09/15 00:27	7440-43-9	
Chromium	**0.26**	mg/kg	0.091	0.039	1	01/07/15 10:00	01/09/15 00:27	7440-47-3	
Copper	**3.5**	mg/kg	0.091	0.026	1	01/07/15 10:00	01/09/15 00:27	7440-50-8	
Lead	**0.49**	mg/kg	0.091	0.010	1	01/07/15 10:00	01/09/15 00:27	7439-92-1	
Mercury	**<0.0070**	mg/kg	0.018	0.0070	1	01/07/15 10:00	01/09/15 00:27	7439-97-6	
Nickel	**0.19**	mg/kg	0.091	0.027	1	01/07/15 10:00	01/09/15 00:27	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.6J**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:05	90-12-0	
2-Methylnaphthalene	**2.4J**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:05	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 21:05	83-32-9	
Acenaphthylene	**7.0**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:05	208-96-8	
Anthracene	**13.3**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:05	120-12-7	
Benzo(a)anthracene	**38.8**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 21:05	56-55-3	
Benzo(a)pyrene	**65.2**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 21:05	50-32-8	
Benzo(b)fluoranthene	**56.3**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 21:05	205-99-2	
Benzo(g,h,i)perylene	**14.9**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 21:05	191-24-2	
Benzo(k)fluoranthene	**58.7**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:05	207-08-9	
Chrysene	**43.8**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 21:05	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 21:05	53-70-3	
Fluoranthene	**60.5**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 21:05	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 21:05	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.3**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:05	193-39-5	B
Naphthalene	**6.0**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 21:05	91-20-3	
Phenanthrene	**9.5**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 21:05	85-01-8	
Pyrene	**64.7**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 21:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	77	%	59-130		2	01/06/15 13:10	01/19/15 21:05	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:10	01/19/15 21:05	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10221 LUMB **Lab ID: 40108983018** Collected: 11/21/14 13:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**92.4**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.97**	%			1		01/08/15 10:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 111214 LUMB **Lab ID: 40108983019** Collected: 11/12/14 15:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:18	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	102	%	45-130		1	01/05/15 13:14	01/21/15 20:18	877-09-8	
Decachlorobiphenyl (S)	101	%	55-130		1	01/05/15 13:14	01/21/15 20:18	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.18**	mg/kg	0.089	0.012	1	01/07/15 10:00	01/09/15 00:33	7440-38-2	
Barium	**10.7**	mg/kg	0.089	0.015	1	01/07/15 10:00	01/09/15 00:33	7440-39-3	
Cadmium	**0.028J**	mg/kg	0.089	0.0070	1	01/07/15 10:00	01/09/15 00:33	7440-43-9	
Chromium	**0.11**	mg/kg	0.089	0.038	1	01/07/15 10:00	01/09/15 00:33	7440-47-3	
Copper	**1.8**	mg/kg	0.089	0.026	1	01/07/15 10:00	01/09/15 00:33	7440-50-8	
Lead	**0.058J**	mg/kg	0.089	0.0098	1	01/07/15 10:00	01/09/15 00:33	7439-92-1	
Mercury	**<0.0069**	mg/kg	0.018	0.0069	1	01/07/15 10:00	01/09/15 00:33	7439-97-6	
Nickel	**0.063J**	mg/kg	0.089	0.027	1	01/07/15 10:00	01/09/15 00:33	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:22	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:22	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:10	01/19/15 21:22	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:22	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:10	01/19/15 21:22	120-12-7	
Benzo(a)anthracene	**1.5J**	ug/kg	3.3	0.68	2	01/06/15 13:10	01/19/15 21:22	56-55-3	
Benzo(a)pyrene	**13.3**	ug/kg	3.3	0.93	2	01/06/15 13:10	01/19/15 21:22	50-32-8	
Benzo(b)fluoranthene	**1.6J**	ug/kg	3.3	0.58	2	01/06/15 13:10	01/19/15 21:22	205-99-2	
Benzo(g,h,i)perylene	**26.1**	ug/kg	3.3	1.1	2	01/06/15 13:10	01/19/15 21:22	191-24-2	
Benzo(k)fluoranthene	**1.3J**	ug/kg	3.3	1.2	2	01/06/15 13:10	01/19/15 21:22	207-08-9	
Chrysene	**2.8J**	ug/kg	3.3	0.84	2	01/06/15 13:10	01/19/15 21:22	218-01-9	
Dibenz(a,h)anthracene	**1.1J**	ug/kg	6.7	0.90	2	01/06/15 13:10	01/19/15 21:22	53-70-3	
Fluoranthene	**4.2**	ug/kg	3.3	0.87	2	01/06/15 13:10	01/19/15 21:22	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:10	01/19/15 21:22	86-73-7	
Indeno(1,2,3-cd)pyrene	**22.4**	ug/kg	3.3	1.4	2	01/06/15 13:10	01/19/15 21:22	193-39-5	B
Naphthalene	**1.2J**	ug/kg	3.3	0.76	2	01/06/15 13:10	01/19/15 21:22	91-20-3	
Phenanthrene	**4.9**	ug/kg	3.3	0.42	2	01/06/15 13:10	01/19/15 21:22	85-01-8	
Pyrene	**4.3**	ug/kg	3.3	0.52	2	01/06/15 13:10	01/19/15 21:22	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		2	01/06/15 13:10	01/19/15 21:22	321-60-8	
Terphenyl-d14 (S)	95	%	51-130		2	01/06/15 13:10	01/19/15 21:22	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: BKGD 111214 LUMB **Lab ID: 40108983019** Collected: 11/12/14 15:35 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.7**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**2.0**	%			1		01/08/15 10:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 111214 LUMB **Lab ID: 40108983020** Collected: 12/11/14 12:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 13:14	01/21/15 20:36	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	101	%	45-130		1	01/05/15 13:14	01/21/15 20:36	877-09-8	
Decachlorobiphenyl (S)	103	%	55-130		1	01/05/15 13:14	01/21/15 20:36	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.6**	mg/kg	0.10	0.013	1	01/07/15 10:00	01/09/15 00:40	7440-38-2	
Barium	**18.6**	mg/kg	0.10	0.017	1	01/07/15 10:00	01/09/15 00:40	7440-39-3	
Cadmium	**0.034J**	mg/kg	0.10	0.0078	1	01/07/15 10:00	01/09/15 00:40	7440-43-9	
Chromium	**0.11**	mg/kg	0.10	0.043	1	01/07/15 10:00	01/09/15 00:40	7440-47-3	
Copper	**4.0**	mg/kg	0.10	0.029	1	01/07/15 10:00	01/09/15 00:40	7440-50-8	
Lead	**0.10**	mg/kg	0.10	0.011	1	01/07/15 10:00	01/09/15 00:40	7439-92-1	
Mercury	**<0.0077**	mg/kg	0.020	0.0077	1	01/07/15 10:00	01/09/15 00:40	7439-97-6	
Nickel	**0.10**	mg/kg	0.10	0.030	1	01/07/15 10:00	01/09/15 00:40	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/19/15 21:39	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/19/15 21:39	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/19/15 21:39	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/19/15 21:39	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/19/15 21:39	120-12-7	
Benzo(a)anthracene	**0.78J**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/19/15 21:39	56-55-3	
Benzo(a)pyrene	**17.5**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/19/15 21:39	50-32-8	
Benzo(b)fluoranthene	**1.3J**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/19/15 21:39	205-99-2	
Benzo(g,h,i)perylene	**22.0**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/19/15 21:39	191-24-2	
Benzo(k)fluoranthene	**1.3J**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/19/15 21:39	207-08-9	
Chrysene	**1.4J**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/19/15 21:39	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/19/15 21:39	53-70-3	
Fluoranthene	**2.1J**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/19/15 21:39	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/19/15 21:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/19/15 21:39	193-39-5	B
Naphthalene	**1.0J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/19/15 21:39	91-20-3	
Phenanthrene	**3.3J**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/19/15 21:39	85-01-8	
Pyrene	**1.8J**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/19/15 21:39	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	59-130		2	01/06/15 13:36	01/19/15 21:39	321-60-8	
Terphenyl-d14 (S)	99	%	51-130		2	01/06/15 13:36	01/19/15 21:39	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: CONTROL 111214 LUMB **Lab ID: 40108983020** Collected: 12/11/14 12:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.3**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10222 LUMB **Lab ID: 40108983021** Collected: 12/11/14 12:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	12672-29-6	
PCB-1254 (Aroclor 1254)	**14.6J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11097-69-1	
PCB-1260 (Aroclor 1260)	**13.9J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	11096-82-5	
PCB, Total	**28.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:30	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	77	%	45-130		1	01/05/15 10:50	01/13/15 11:30	877-09-8	
Decachlorobiphenyl (S)	93	%	55-130		1	01/05/15 10:50	01/13/15 11:30	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.1**	mg/kg	0.10	0.013	1	01/08/15 08:42	01/08/15 17:47	7440-38-2	
Barium	**20.2**	mg/kg	0.10	0.017	1	01/08/15 08:42	01/08/15 17:47	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.10	0.0078	1	01/08/15 08:42	01/08/15 17:47	7440-43-9	
Chromium	**0.30**	mg/kg	0.10	0.043	1	01/08/15 08:42	01/08/15 17:47	7440-47-3	
Copper	**4.4**	mg/kg	0.10	0.029	1	01/08/15 08:42	01/08/15 17:47	7440-50-8	
Lead	**0.30**	mg/kg	0.10	0.011	1	01/08/15 08:42	01/08/15 17:47	7439-92-1	
Mercury	**0.0084J**	mg/kg	0.020	0.0077	1	01/08/15 08:42	01/08/15 17:47	7439-97-6	
Nickel	**0.27**	mg/kg	0.10	0.030	1	01/08/15 08:42	01/08/15 17:47	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<3.0**	ug/kg	6.7	3.0	4	01/06/15 13:36	01/28/15 11:40	90-12-0	
2-Methylnaphthalene	**<2.8**	ug/kg	6.7	2.8	4	01/06/15 13:36	01/28/15 11:40	91-57-6	
Acenaphthene	**<1.1**	ug/kg	6.7	1.1	4	01/06/15 13:36	01/28/15 11:40	83-32-9	
Acenaphthylene	**3.8J**	ug/kg	6.7	2.4	4	01/06/15 13:36	01/28/15 11:40	208-96-8	
Anthracene	**10.9**	ug/kg	6.7	3.0	4	01/06/15 13:36	01/28/15 11:40	120-12-7	
Benzo(a)anthracene	**39.2**	ug/kg	6.7	1.4	4	01/06/15 13:36	01/28/15 11:40	56-55-3	
Benzo(a)pyrene	**20.8**	ug/kg	6.7	1.9	4	01/06/15 13:36	01/28/15 11:40	50-32-8	
Benzo(b)fluoranthene	**40.9**	ug/kg	6.7	1.2	4	01/06/15 13:36	01/28/15 11:40	205-99-2	
Benzo(g,h,i)perylene	**28.7**	ug/kg	6.7	2.2	4	01/06/15 13:36	01/28/15 11:40	191-24-2	
Benzo(k)fluoranthene	**44.4**	ug/kg	6.7	2.5	4	01/06/15 13:36	01/28/15 11:40	207-08-9	
Chrysene	**53.5**	ug/kg	6.7	1.7	4	01/06/15 13:36	01/28/15 11:40	218-01-9	
Dibenz(a,h)anthracene	**2.5J**	ug/kg	13.3	1.8	4	01/06/15 13:36	01/28/15 11:40	53-70-3	
Fluoranthene	**76.1**	ug/kg	6.7	1.7	4	01/06/15 13:36	01/28/15 11:40	206-44-0	
Fluorene	**<3.7**	ug/kg	6.7	3.7	4	01/06/15 13:36	01/28/15 11:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**10.0**	ug/kg	6.7	2.9	4	01/06/15 13:36	01/28/15 11:40	193-39-5	B
Naphthalene	**<1.5**	ug/kg	6.7	1.5	4	01/06/15 13:36	01/28/15 11:40	91-20-3	
Phenanthrene	**6.1J**	ug/kg	6.7	0.84	4	01/06/15 13:36	01/28/15 11:40	85-01-8	
Pyrene	**73.8**	ug/kg	6.7	1.0	4	01/06/15 13:36	01/28/15 11:40	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%	59-130		4	01/06/15 13:36	01/28/15 11:40	321-60-8	
Terphenyl-d14 (S)	94	%	51-130		4	01/06/15 13:36	01/28/15 11:40	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10222 LUMB **Lab ID: 40108983021** Collected: 12/11/14 12:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**89.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.92**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10223 LUMB **Lab ID: 40108983022** Collected: 12/11/14 14:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	12672-29-6	
PCB-1254 (Aroclor 1254)	**23.3J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11097-69-1	
PCB-1260 (Aroclor 1260)	**29.4**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	11096-82-5	
PCB, Total	**52.7**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 11:48	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	45-130		1	01/05/15 10:50	01/13/15 11:48	877-09-8	
Decachlorobiphenyl (S)	101	%	55-130		1	01/05/15 10:50	01/13/15 11:48	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**1.0**	mg/kg	0.087	0.012	1	01/08/15 08:42	01/08/15 18:26	7440-38-2	
Barium	**22.9**	mg/kg	0.087	0.015	1	01/08/15 08:42	01/08/15 18:26	7440-39-3	
Cadmium	**0.042J**	mg/kg	0.087	0.0068	1	01/08/15 08:42	01/08/15 18:26	7440-43-9	
Chromium	**0.28**	mg/kg	0.087	0.038	1	01/08/15 08:42	01/08/15 18:26	7440-47-3	
Copper	**3.4**	mg/kg	0.087	0.025	1	01/08/15 08:42	01/08/15 18:26	7440-50-8	
Lead	**0.32**	mg/kg	0.087	0.0096	1	01/08/15 08:42	01/08/15 18:26	7439-92-1	
Mercury	**0.0086J**	mg/kg	0.017	0.0067	1	01/08/15 08:42	01/08/15 18:26	7439-97-6	
Nickel	**0.22**	mg/kg	0.087	0.026	1	01/08/15 08:42	01/08/15 18:26	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:10	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:10	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:10	83-32-9	
Acenaphthylene	**6.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:10	208-96-8	
Anthracene	**13.1**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:10	120-12-7	
Benzo(a)anthracene	**14.5**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:10	56-55-3	
Benzo(a)pyrene	**57.8**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:10	50-32-8	
Benzo(b)fluoranthene	**14.3**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:10	205-99-2	
Benzo(g,h,i)perylene	**13.7**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:10	191-24-2	
Benzo(k)fluoranthene	**22.9**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:10	207-08-9	
Chrysene	**22.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:10	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:10	53-70-3	
Fluoranthene	**32.4**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:10	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:10	86-73-7	
Indeno(1,2,3-cd)pyrene	**16.7**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:10	193-39-5	B
Naphthalene	**1.1J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:10	91-20-3	
Phenanthrene	**6.9**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:10	85-01-8	
Pyrene	**29.9**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:10	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	94	%	59-130		2	01/06/15 13:36	01/28/15 09:10	321-60-8	
Terphenyl-d14 (S)	102	%	51-130		2	01/06/15 13:36	01/28/15 09:10	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10223 LUMB **Lab ID: 40108983022** Collected: 12/11/14 14:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.3**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10224 LUMB **Lab ID: 40108983023** Collected: 12/11/14 15:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	12672-29-6	
PCB-1254 (Aroclor 1254)	**18.2J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11097-69-1	
PCB-1260 (Aroclor 1260)	**19.6J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	11096-82-5	
PCB, Total	**37.8**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:05	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	79	%	45-130		1	01/05/15 10:50	01/13/15 12:05	877-09-8	
Decachlorobiphenyl (S)	98	%	55-130		1	01/05/15 10:50	01/13/15 12:05	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.62**	mg/kg	0.095	0.013	1	01/08/15 08:42	01/09/15 08:38	7440-38-2	
Barium	**18.2**	mg/kg	0.095	0.016	1	01/08/15 08:42	01/09/15 08:38	7440-39-3	
Cadmium	**0.031J**	mg/kg	0.095	0.0075	1	01/08/15 08:42	01/09/15 08:38	7440-43-9	
Chromium	**0.26**	mg/kg	0.095	0.041	1	01/08/15 08:42	01/09/15 08:38	7440-47-3	
Copper	**2.7**	mg/kg	0.095	0.027	1	01/08/15 08:42	01/09/15 08:38	7440-50-8	
Lead	**0.21**	mg/kg	0.095	0.010	1	01/08/15 08:42	01/09/15 08:38	7439-92-1	
Mercury	**<0.0073**	mg/kg	0.019	0.0073	1	01/08/15 08:42	01/09/15 08:38	7439-97-6	
Nickel	**0.19**	mg/kg	0.095	0.029	1	01/08/15 08:42	01/09/15 08:38	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<7.5**	ug/kg	16.7	7.5	10	01/06/15 13:36	01/28/15 11:58	90-12-0	
2-Methylnaphthalene	**<7.1**	ug/kg	16.7	7.1	10	01/06/15 13:36	01/28/15 11:58	91-57-6	
Acenaphthene	**<2.8**	ug/kg	16.7	2.8	10	01/06/15 13:36	01/28/15 11:58	83-32-9	
Acenaphthylene	**<6.0**	ug/kg	16.7	6.0	10	01/06/15 13:36	01/28/15 11:58	208-96-8	
Anthracene	**21.1**	ug/kg	16.7	7.4	10	01/06/15 13:36	01/28/15 11:58	120-12-7	
Benzo(a)anthracene	**59.4**	ug/kg	16.7	3.4	10	01/06/15 13:36	01/28/15 11:58	56-55-3	
Benzo(a)pyrene	**26.8**	ug/kg	16.7	4.7	10	01/06/15 13:36	01/28/15 11:58	50-32-8	
Benzo(b)fluoranthene	**64.8**	ug/kg	16.7	2.9	10	01/06/15 13:36	01/28/15 11:58	205-99-2	
Benzo(g,h,i)perylene	**28.2**	ug/kg	16.7	5.5	10	01/06/15 13:36	01/28/15 11:58	191-24-2	
Benzo(k)fluoranthene	**68.9**	ug/kg	16.7	6.1	10	01/06/15 13:36	01/28/15 11:58	207-08-9	
Chrysene	**100**	ug/kg	16.7	4.2	10	01/06/15 13:36	01/28/15 11:58	218-01-9	
Dibenz(a,h)anthracene	**<4.5**	ug/kg	33.3	4.5	10	01/06/15 13:36	01/28/15 11:58	53-70-3	
Fluoranthene	**158**	ug/kg	16.7	4.3	10	01/06/15 13:36	01/28/15 11:58	206-44-0	
Fluorene	**<9.2**	ug/kg	16.7	9.2	10	01/06/15 13:36	01/28/15 11:58	86-73-7	
Indeno(1,2,3-cd)pyrene	**25.0**	ug/kg	16.7	7.2	10	01/06/15 13:36	01/28/15 11:58	193-39-5	B
Naphthalene	**<3.8**	ug/kg	16.7	3.8	10	01/06/15 13:36	01/28/15 11:58	91-20-3	
Phenanthrene	**17.6**	ug/kg	16.7	2.1	10	01/06/15 13:36	01/28/15 11:58	85-01-8	
Pyrene	**162**	ug/kg	16.7	2.6	10	01/06/15 13:36	01/28/15 11:58	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	84	%	59-130		10	01/06/15 13:36	01/28/15 11:58	321-60-8	
Terphenyl-d14 (S)	85	%	51-130		10	01/06/15 13:36	01/28/15 11:58	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10224 LUMB **Lab ID: 40108983023** Collected: 12/11/14 15:40 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.8**	%	0.10	0.10	1		01/07/15 05:48		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.2**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10225 LUMB **Lab ID: 40108983024** Collected: 12/11/14 16:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:22	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	84	%	45-130		1	01/05/15 10:50	01/13/15 12:22	877-09-8	
Decachlorobiphenyl (S)	104	%	55-130		1	01/05/15 10:50	01/13/15 12:22	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.99**	mg/kg	0.096	0.013	1	01/08/15 08:42	01/08/15 18:46	7440-38-2	
Barium	**17.4**	mg/kg	0.096	0.016	1	01/08/15 08:42	01/08/15 18:46	7440-39-3	
Cadmium	**0.029J**	mg/kg	0.096	0.0075	1	01/08/15 08:42	01/08/15 18:46	7440-43-9	
Chromium	**0.19**	mg/kg	0.096	0.042	1	01/08/15 08:42	01/08/15 18:46	7440-47-3	
Copper	**2.6**	mg/kg	0.096	0.028	1	01/08/15 08:42	01/08/15 18:46	7440-50-8	
Lead	**0.20**	mg/kg	0.096	0.011	1	01/08/15 08:42	01/08/15 18:46	7439-92-1	
Mercury	**0.0079J**	mg/kg	0.019	0.0074	1	01/08/15 08:42	01/08/15 18:46	7439-97-6	
Nickel	**0.21**	mg/kg	0.096	0.029	1	01/08/15 08:42	01/08/15 18:46	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<9.4**	ug/kg	20.8	9.4	12.5	01/06/15 13:36	01/28/15 12:15	90-12-0	
2-Methylnaphthalene	**<8.9**	ug/kg	20.8	8.9	12.5	01/06/15 13:36	01/28/15 12:15	91-57-6	
Acenaphthene	**<3.4**	ug/kg	20.8	3.4	12.5	01/06/15 13:36	01/28/15 12:15	83-32-9	
Acenaphthylene	**8.3J**	ug/kg	20.8	7.6	12.5	01/06/15 13:36	01/28/15 12:15	208-96-8	
Anthracene	**28.2**	ug/kg	20.8	9.3	12.5	01/06/15 13:36	01/28/15 12:15	120-12-7	
Benzo(a)anthracene	**69.4**	ug/kg	20.8	4.2	12.5	01/06/15 13:36	01/28/15 12:15	56-55-3	
Benzo(a)pyrene	**25.7**	ug/kg	20.8	5.8	12.5	01/06/15 13:36	01/28/15 12:15	50-32-8	
Benzo(b)fluoranthene	**107**	ug/kg	20.8	3.6	12.5	01/06/15 13:36	01/28/15 12:15	205-99-2	
Benzo(g,h,i)perylene	**25.0**	ug/kg	20.8	6.9	12.5	01/06/15 13:36	01/28/15 12:15	191-24-2	
Benzo(k)fluoranthene	**64.1**	ug/kg	20.8	7.7	12.5	01/06/15 13:36	01/28/15 12:15	207-08-9	
Chrysene	**119**	ug/kg	20.8	5.3	12.5	01/06/15 13:36	01/28/15 12:15	218-01-9	
Dibenz(a,h)anthracene	**5.9J**	ug/kg	41.7	5.6	12.5	01/06/15 13:36	01/28/15 12:15	53-70-3	
Fluoranthene	**198**	ug/kg	20.8	5.4	12.5	01/06/15 13:36	01/28/15 12:15	206-44-0	
Fluorene	**<11.5**	ug/kg	20.8	11.5	12.5	01/06/15 13:36	01/28/15 12:15	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.9J**	ug/kg	20.8	9.0	12.5	01/06/15 13:36	01/28/15 12:15	193-39-5	B
Naphthalene	**<4.8**	ug/kg	20.8	4.8	12.5	01/06/15 13:36	01/28/15 12:15	91-20-3	
Phenanthrene	**15.8J**	ug/kg	20.8	2.6	12.5	01/06/15 13:36	01/28/15 12:15	85-01-8	
Pyrene	**190**	ug/kg	20.8	3.3	12.5	01/06/15 13:36	01/28/15 12:15	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	89	%	59-130		12.5	01/06/15 13:36	01/28/15 12:15	321-60-8	
Terphenyl-d14 (S)	86	%	51-130		12.5	01/06/15 13:36	01/28/15 12:15	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10225 LUMB **Lab ID: 40108983024** Collected: 12/11/14 16:05 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**91.6**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**0.90**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10226 LUMB **Lab ID: 40108983025** Collected: 12/11/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**16.9J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11097-69-1	
PCB-1260 (Aroclor 1260)	**17.5J**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	11096-82-5	
PCB, Total	**34.4**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:40	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	75	%	45-130		1	01/05/15 10:50	01/13/15 12:40	877-09-8	
Decachlorobiphenyl (S)	97	%	55-130		1	01/05/15 10:50	01/13/15 12:40	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.98**	mg/kg	0.093	0.012	1	01/08/15 08:42	01/08/15 18:52	7440-38-2	
Barium	**27.2**	mg/kg	0.093	0.016	1	01/08/15 08:42	01/08/15 18:52	7440-39-3	
Cadmium	**0.047J**	mg/kg	0.093	0.0073	1	01/08/15 08:42	01/08/15 18:52	7440-43-9	
Chromium	**0.27**	mg/kg	0.093	0.040	1	01/08/15 08:42	01/08/15 18:52	7440-47-3	
Copper	**3.1**	mg/kg	0.093	0.027	1	01/08/15 08:42	01/08/15 18:52	7440-50-8	
Lead	**0.40**	mg/kg	0.093	0.010	1	01/08/15 08:42	01/08/15 18:52	7439-92-1	
Mercury	**0.0099J**	mg/kg	0.019	0.0072	1	01/08/15 08:42	01/08/15 18:52	7439-97-6	
Nickel	**0.25**	mg/kg	0.093	0.028	1	01/08/15 08:42	01/08/15 18:52	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**3.1J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:27	90-12-0	
2-Methylnaphthalene	**4.8**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:27	91-57-6	
Acenaphthene	**0.80J**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:27	83-32-9	
Acenaphthylene	**5.1**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:27	208-96-8	
Anthracene	**10.2**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:27	120-12-7	
Benzo(a)anthracene	**15.0**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:27	56-55-3	
Benzo(a)pyrene	**44.1**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:27	50-32-8	
Benzo(b)fluoranthene	**7.8**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:27	205-99-2	
Benzo(g,h,i)perylene	**23.1**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:27	191-24-2	
Benzo(k)fluoranthene	**10.8**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:27	207-08-9	
Chrysene	**12.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:27	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:27	53-70-3	
Fluoranthene	**23.3**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:27	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:27	86-73-7	
Indeno(1,2,3-cd)pyrene	**20.2**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:27	193-39-5	B
Naphthalene	**14.3**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:27	91-20-3	
Phenanthrene	**9.1**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:27	85-01-8	
Pyrene	**23.0**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	59-130		2	01/06/15 13:36	01/28/15 09:27	321-60-8	
Terphenyl-d14 (S)	93	%	51-130		2	01/06/15 13:36	01/28/15 09:27	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10226 LUMB **Lab ID: 40108983025** Collected: 12/11/14 16:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**88.6**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.7**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10254 LUMB **Lab ID: 40108983026** Collected: 12/12/14 09:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 12:57	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 10:50	01/13/15 12:57	877-09-8	
Decachlorobiphenyl (S)	104	%	55-130		1	01/05/15 10:50	01/13/15 12:57	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.26**	mg/kg	0.095	0.013	1	01/08/15 08:42	01/08/15 18:59	7440-38-2	
Barium	**14.8**	mg/kg	0.095	0.016	1	01/08/15 08:42	01/08/15 18:59	7440-39-3	
Cadmium	**0.036J**	mg/kg	0.095	0.0074	1	01/08/15 08:42	01/08/15 18:59	7440-43-9	
Chromium	**0.50**	mg/kg	0.095	0.041	1	01/08/15 08:42	01/08/15 18:59	7440-47-3	
Copper	**3.3**	mg/kg	0.095	0.027	1	01/08/15 08:42	01/08/15 18:59	7440-50-8	
Lead	**0.22**	mg/kg	0.095	0.010	1	01/08/15 08:42	01/08/15 18:59	7439-92-1	
Mercury	**0.0073J**	mg/kg	0.019	0.0073	1	01/08/15 08:42	01/08/15 18:59	7439-97-6	
Nickel	**0.27**	mg/kg	0.095	0.028	1	01/08/15 08:42	01/08/15 18:59	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**1.9J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:44	90-12-0	
2-Methylnaphthalene	**2.5J**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:44	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 09:44	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:44	208-96-8	
Anthracene	**2.2J**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 09:44	120-12-7	
Benzo(a)anthracene	**9.8**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 09:44	56-55-3	
Benzo(a)pyrene	**27.8**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 09:44	50-32-8	
Benzo(b)fluoranthene	**12.3**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 09:44	205-99-2	
Benzo(g,h,i)perylene	**16.4**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 09:44	191-24-2	
Benzo(k)fluoranthene	**16.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 09:44	207-08-9	
Chrysene	**13.4**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 09:44	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 09:44	53-70-3	
Fluoranthene	**16.4**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 09:44	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 09:44	86-73-7	
Indeno(1,2,3-cd)pyrene	**19.7**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 09:44	193-39-5	B
Naphthalene	**2.3J**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 09:44	91-20-3	
Phenanthrene	**7.5**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 09:44	85-01-8	
Pyrene	**17.3**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 09:44	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	59-130		2	01/06/15 13:36	01/28/15 09:44	321-60-8	
Terphenyl-d14 (S)	104	%	51-130		2	01/06/15 13:36	01/28/15 09:44	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10254 LUMB **Lab ID: 40108983026** Collected: 12/12/14 09:00 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.9**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.1**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10256 LUMB **Lab ID: 40108983027** Collected: 12/12/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	12674-11-2	
PCB-1221 (Aroclor 1221)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11104-28-2	
PCB-1232 (Aroclor 1232)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11141-16-5	
PCB-1242 (Aroclor 1242)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	53469-21-9	
PCB-1248 (Aroclor 1248)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	12672-29-6	
PCB-1254 (Aroclor 1254)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11097-69-1	
PCB-1260 (Aroclor 1260)	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	11096-82-5	
PCB, Total	**<12.5**	ug/kg	25.0	12.5	1	01/05/15 10:50	01/13/15 13:14	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	45-130		1	01/05/15 10:50	01/13/15 13:14	877-09-8	
Decachlorobiphenyl (S)	107	%	55-130		1	01/05/15 10:50	01/13/15 13:14	2051-24-3	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B								
Arsenic	**0.25**	mg/kg	0.085	0.011	1	01/08/15 08:42	01/08/15 19:05	7440-38-2	
Barium	**15.7**	mg/kg	0.085	0.014	1	01/08/15 08:42	01/08/15 19:05	7440-39-3	
Cadmium	**0.042J**	mg/kg	0.085	0.0066	1	01/08/15 08:42	01/08/15 19:05	7440-43-9	
Chromium	**0.32**	mg/kg	0.085	0.036	1	01/08/15 08:42	01/08/15 19:05	7440-47-3	
Copper	**3.4**	mg/kg	0.085	0.024	1	01/08/15 08:42	01/08/15 19:05	7440-50-8	
Lead	**0.14**	mg/kg	0.085	0.0093	1	01/08/15 08:42	01/08/15 19:05	7439-92-1	
Mercury	**<0.0065**	mg/kg	0.017	0.0065	1	01/08/15 08:42	01/08/15 19:05	7439-97-6	
Nickel	**0.32**	mg/kg	0.085	0.025	1	01/08/15 08:42	01/08/15 19:05	7440-02-0	
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3540								
1-Methylnaphthalene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 10:01	90-12-0	
2-Methylnaphthalene	**<1.4**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 10:01	91-57-6	
Acenaphthene	**<0.55**	ug/kg	3.3	0.55	2	01/06/15 13:36	01/28/15 10:01	83-32-9	
Acenaphthylene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 10:01	208-96-8	
Anthracene	**<1.5**	ug/kg	3.3	1.5	2	01/06/15 13:36	01/28/15 10:01	120-12-7	
Benzo(a)anthracene	**0.99J**	ug/kg	3.3	0.68	2	01/06/15 13:36	01/28/15 10:01	56-55-3	
Benzo(a)pyrene	**14.0**	ug/kg	3.3	0.93	2	01/06/15 13:36	01/28/15 10:01	50-32-8	
Benzo(b)fluoranthene	**0.63J**	ug/kg	3.3	0.58	2	01/06/15 13:36	01/28/15 10:01	205-99-2	
Benzo(g,h,i)perylene	**22.9**	ug/kg	3.3	1.1	2	01/06/15 13:36	01/28/15 10:01	191-24-2	
Benzo(k)fluoranthene	**<1.2**	ug/kg	3.3	1.2	2	01/06/15 13:36	01/28/15 10:01	207-08-9	
Chrysene	**1.2J**	ug/kg	3.3	0.84	2	01/06/15 13:36	01/28/15 10:01	218-01-9	
Dibenz(a,h)anthracene	**<0.90**	ug/kg	6.7	0.90	2	01/06/15 13:36	01/28/15 10:01	53-70-3	
Fluoranthene	**2.4J**	ug/kg	3.3	0.87	2	01/06/15 13:36	01/28/15 10:01	206-44-0	
Fluorene	**<1.8**	ug/kg	3.3	1.8	2	01/06/15 13:36	01/28/15 10:01	86-73-7	
Indeno(1,2,3-cd)pyrene	**16.0**	ug/kg	3.3	1.4	2	01/06/15 13:36	01/28/15 10:01	193-39-5	B
Naphthalene	**<0.76**	ug/kg	3.3	0.76	2	01/06/15 13:36	01/28/15 10:01	91-20-3	
Phenanthrene	**3.0J**	ug/kg	3.3	0.42	2	01/06/15 13:36	01/28/15 10:01	85-01-8	
Pyrene	**2.6J**	ug/kg	3.3	0.52	2	01/06/15 13:36	01/28/15 10:01	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	59-130		2	01/06/15 13:36	01/28/15 10:01	321-60-8	
Terphenyl-d14 (S)	93	%	51-130		2	01/06/15 13:36	01/28/15 10:01	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Sample: 10256 LUMB **Lab ID: 40108983027** Collected: 12/12/14 12:30 Received: 12/30/14 10:30 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture Reportable	Analytical Method: ASTM D2974-87								
Percent Moisture	**90.2**	%	0.10	0.10	1		01/07/15 05:49		
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.4**	%			1		01/08/15 10:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: MPRP/11294 | Analysis Method: EPA 6020
QC Batch Method: EPA 3050B | Analysis Description: 6020 MET TISSUE

Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

METHOD BLANK: 1103914 | Matrix: Tissue

Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.013	0.10	01/08/15 21:04	
Barium	mg/kg	<0.017	0.10	01/08/15 21:04	
Cadmium	mg/kg	<0.0078	0.10	01/08/15 21:04	
Chromium	mg/kg	<0.043	0.10	01/08/15 21:04	
Copper	mg/kg	<0.029	0.10	01/08/15 21:04	
Lead	mg/kg	<0.011	0.10	01/08/15 21:04	
Mercury	mg/kg	<0.0077	0.020	01/08/15 21:04	
Nickel	mg/kg	<0.030	0.10	01/08/15 21:04	

LABORATORY CONTROL SAMPLE: 1103916

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	20	20.8	104	80-120	
Barium	mg/kg	20	19.8	99	80-120	
Cadmium	mg/kg	20	20.9	104	80-120	
Chromium	mg/kg	20	19.9	100	80-120	
Copper	mg/kg	20	19.7	99	80-120	
Lead	mg/kg	20	20.0	100	80-120	
Mercury	mg/kg	.5	0.48	96	80-120	
Nickel	mg/kg	20	19.5	97	80-120	

LABORATORY CONTROL SAMPLE: 1103917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	59.5	69.6	117	80-120	
Cadmium	mg/kg	42.3	41.7	99	80-120	
Chromium	mg/kg	2	1.5	76	71-120	
Copper	mg/kg	497	412	83	80-120	
Lead	mg/kg	.22	0.21	92	80-120	
Mercury	mg/kg	.29	0.27	93	80-120	
Nickel	mg/kg	5.3	4.6	87	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1103918 1103919

Parameter	Units	40108983001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	0.21	19.9	20	20.8	20.5	103	102	75-125	1	20	
Barium	mg/kg	11.5	19.9	20	31.2	31.3	99	99	75-125	0	20	
Cadmium	mg/kg	0.037J	19.9	20	20.8	20.6	104	103	75-125	1	20	
Chromium	mg/kg	0.061J	19.9	20	20.0	19.9	100	100	75-125	0	20	
Copper	mg/kg	2.0	19.9	20	21.9	21.9	100	100	75-125	0	20	
Lead	mg/kg	0.062J	19.9	20	20.0	20.0	100	100	75-125	0	20	
Mercury	mg/kg	<0.0076	.5	.5	0.50	0.51	99	101	75-125	3	20	
Nickel	mg/kg	0.065J	19.9	20	19.7	19.6	99	98	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: MPRP/11301 | Analysis Method: EPA 6020
QC Batch Method: EPA 3050B | Analysis Description: 6020 MET TISSUE
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1104648 | Matrix: Tissue
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.013	0.10	01/08/15 17:08	
Barium	mg/kg	0.034J	0.10	01/08/15 17:08	
Cadmium	mg/kg	<0.0078	0.10	01/08/15 17:08	
Chromium	mg/kg	<0.043	0.10	01/08/15 17:08	
Copper	mg/kg	0.044J	0.10	01/08/15 17:08	
Lead	mg/kg	<0.011	0.10	01/08/15 17:08	
Mercury	mg/kg	<0.0077	0.020	01/08/15 17:08	
Nickel	mg/kg	<0.030	0.10	01/08/15 17:08	

LABORATORY CONTROL SAMPLE: 1104650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	20	21.2	106	80-120	
Barium	mg/kg	20	19.9	99	80-120	
Cadmium	mg/kg	20	21.1	106	80-120	
Chromium	mg/kg	20	20.0	100	80-120	
Copper	mg/kg	20	23.7	118	80-120	
Lead	mg/kg	20	19.8	99	80-120	
Mercury	mg/kg	.5	0.49	98	80-120	
Nickel	mg/kg	20	19.7	98	80-120	

LABORATORY CONTROL SAMPLE: 1104651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	59.5	68.2	115	80-120	
Cadmium	mg/kg	42.3	42.1	99	80-120	
Chromium	mg/kg	2	1.6	82	71-120	
Copper	mg/kg	497	414	83	80-120	
Lead	mg/kg	.22	0.21	93	80-120	
Mercury	mg/kg	.29	0.28	95	80-120	
Nickel	mg/kg	5.3	4.7	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1104652 1104653

Parameter	Units	40108983021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.1	19.9	20	22.2	22.3	106	106	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1104652 1104653

Parameter	Units	40108983021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/kg	20.2	19.9	20	39.9	41.5	99	107	75-125	4	20	
Cadmium	mg/kg	0.047J	19.9	20	21.3	21.2	107	106	75-125	0	20	
Chromium	mg/kg	0.30	19.9	20	20.2	20.8	100	103	75-125	3	20	
Copper	mg/kg	4.4	19.9	20	24.0	24.7	99	102	75-125	3	20	
Lead	mg/kg	0.30	19.9	20	19.9	20.4	99	101	75-125	2	20	
Mercury	mg/kg	0.0084J	.5	.5	0.51	0.52	102	103	75-125	2	20	
Nickel	mg/kg	0.27	19.9	20	20.0	20.5	99	102	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25575 Analysis Method: EPA 8082A
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

METHOD BLANK: 1103368 Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1221 (Aroclor 1221)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1232 (Aroclor 1232)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1242 (Aroclor 1242)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1248 (Aroclor 1248)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1254 (Aroclor 1254)	ug/kg	<12.5	25.0	01/21/15 13:29	
PCB-1260 (Aroclor 1260)	ug/kg	<12.5	25.0	01/21/15 13:29	
Decachlorobiphenyl (S)	%	84	55-130	01/21/15 13:29	
Tetrachloro-m-xylene (S)	%	84	45-130	01/21/15 13:29	

LABORATORY CONTROL SAMPLE & LCSD: 1103369 1103386

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<12.5	<12.5					20	
PCB-1221 (Aroclor 1221)	ug/kg		<12.5	<12.5					20	
PCB-1232 (Aroclor 1232)	ug/kg		<12.5	<12.5					20	
PCB-1242 (Aroclor 1242)	ug/kg		<12.5	<12.5					20	
PCB-1248 (Aroclor 1248)	ug/kg		<12.5	<12.5					20	
PCB-1254 (Aroclor 1254)	ug/kg	250	218	207	87	83	56-130	5	20	
PCB-1260 (Aroclor 1260)	ug/kg		<12.5	<12.5					20	
Decachlorobiphenyl (S)	%				95	84	55-130			
Tetrachloro-m-xylene (S)	%				91	85	45-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25576 Analysis Method: EPA 8082A
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1103372 Matrix: Tissue
Associated Lab Samples: 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1221 (Aroclor 1221)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1232 (Aroclor 1232)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1242 (Aroclor 1242)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1248 (Aroclor 1248)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1254 (Aroclor 1254)	ug/kg	<12.5	25.0	01/13/15 10:38	
PCB-1260 (Aroclor 1260)	ug/kg	<12.5	25.0	01/13/15 10:38	
Decachlorobiphenyl (S)	%	84	55-130	01/13/15 10:38	
Tetrachloro-m-xylene (S)	%	75	45-130	01/13/15 10:38	

LABORATORY CONTROL SAMPLE & LCSD: 1103373 1103387

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<12.5	<12.5					20	
PCB-1221 (Aroclor 1221)	ug/kg		<12.5	<12.5					20	
PCB-1232 (Aroclor 1232)	ug/kg		<12.5	<12.5					20	
PCB-1242 (Aroclor 1242)	ug/kg		<12.5	<12.5					20	
PCB-1248 (Aroclor 1248)	ug/kg		<12.5	<12.5					20	
PCB-1254 (Aroclor 1254)	ug/kg	250	163	182	65	73	56-130	11	20	
PCB-1260 (Aroclor 1260)	ug/kg		<12.5	<12.5					20	
Decachlorobiphenyl (S)	%				83	90	55-130			
Tetrachloro-m-xylene (S)	%				71	75	45-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25577 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3540 | Analysis Description: 8270 Tissue PAH by SIM MSSV
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

METHOD BLANK: 1103376 | Matrix: Tissue
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<1.5	3.3	01/19/15 14:02	
2-Methylnaphthalene	ug/kg	<1.4	3.3	01/19/15 14:02	
Acenaphthene	ug/kg	<0.55	3.3	01/19/15 14:02	
Acenaphthylene	ug/kg	<1.2	3.3	01/19/15 14:02	
Anthracene	ug/kg	<1.5	3.3	01/19/15 14:02	
Benzo(a)anthracene	ug/kg	<0.68	3.3	01/19/15 14:02	
Benzo(a)pyrene	ug/kg	<0.93	3.3	01/19/15 14:02	
Benzo(b)fluoranthene	ug/kg	<0.58	3.3	01/19/15 14:02	
Benzo(g,h,i)perylene	ug/kg	<1.1	3.3	01/19/15 14:02	
Benzo(k)fluoranthene	ug/kg	<1.2	3.3	01/19/15 14:02	
Chrysene	ug/kg	<0.84	3.3	01/19/15 14:02	
Dibenz(a,h)anthracene	ug/kg	<0.90	6.7	01/19/15 14:02	
Fluoranthene	ug/kg	<0.87	3.3	01/19/15 14:02	
Fluorene	ug/kg	<1.8	3.3	01/19/15 14:02	
Indeno(1,2,3-cd)pyrene	ug/kg	4.9	3.3	01/19/15 14:02	
Naphthalene	ug/kg	<0.76	3.3	01/19/15 14:02	
Phenanthrene	ug/kg	<0.42	3.3	01/19/15 14:02	
Pyrene	ug/kg	<0.52	3.3	01/19/15 14:02	
2-Fluorobiphenyl (S)	%	91	59-130	01/19/15 14:02	
Terphenyl-d14 (S)	%	92	51-130	01/19/15 14:02	

LABORATORY CONTROL SAMPLE & LCSD: 1103377 1103384

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	22.4	23.3	67	70	50-140	4	40	
2-Methylnaphthalene	ug/kg	33.3	25.2	26.1	76	78	50-140	3	40	
Acenaphthene	ug/kg	33.3	25.2	26.8	76	80	55-130	6	40	
Acenaphthylene	ug/kg	33.3	24.9	25.7	75	77	48-130	3	40	
Anthracene	ug/kg	33.3	24.6	23.6	74	71	41-130	4	40	
Benzo(a)anthracene	ug/kg	33.3	28.4	27.0	85	81	50-130	5	40	
Benzo(a)pyrene	ug/kg	33.3	24.2	23.0	72	69	50-130	5	40	
Benzo(b)fluoranthene	ug/kg	33.3	19.9	18.9	60	57	50-130	5	40	
Benzo(g,h,i)perylene	ug/kg	33.3	23.2	22.9	70	69	20-130	1	40	
Benzo(k)fluoranthene	ug/kg	33.3	27.7	27.8	83	83	50-130	0	40	
Chrysene	ug/kg	33.3	23.8	23.7	71	71	55-130	1	40	
Dibenz(a,h)anthracene	ug/kg	33.3	21.5	22.6	64	68	33-130	5	40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

LABORATORY CONTROL SAMPLE & LCSD: 1103377 1103384

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Fluoranthene	ug/kg	33.3	26.7	26.7	80	80	51-130	0	40	
Fluorene	ug/kg	33.3	27.2	28.6	82	86	55-130	5	40	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	23.6	22.2	71	66	33-130	6	40	
Naphthalene	ug/kg	33.3	21.0	21.5	63	65	47-130	2	40	
Phenanthrene	ug/kg	33.3	27.9	28.1	84	84	49-130	0	40	
Pyrene	ug/kg	33.3	30.7	30.0	92	90	46-130	2	40	
2-Fluorobiphenyl (S)	%				92	96	59-130			
Terphenyl-d14 (S)	%				88	85	51-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25578 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3540 | Analysis Description: 8270 Tissue PAH by SIM MSSV
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1103380 | Matrix: Tissue
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<1.5	3.3	01/19/15 14:54	
2-Methylnaphthalene	ug/kg	<1.4	3.3	01/19/15 14:54	
Acenaphthene	ug/kg	<0.55	3.3	01/19/15 14:54	
Acenaphthylene	ug/kg	<1.2	3.3	01/19/15 14:54	
Anthracene	ug/kg	<1.5	3.3	01/19/15 14:54	
Benzo(a)anthracene	ug/kg	<0.68	3.3	01/19/15 14:54	
Benzo(a)pyrene	ug/kg	<0.93	3.3	01/19/15 14:54	
Benzo(b)fluoranthene	ug/kg	<0.58	3.3	01/19/15 14:54	
Benzo(g,h,i)perylene	ug/kg	<1.1	3.3	01/19/15 14:54	
Benzo(k)fluoranthene	ug/kg	<1.2	3.3	01/19/15 14:54	
Chrysene	ug/kg	<0.84	3.3	01/19/15 14:54	
Dibenz(a,h)anthracene	ug/kg	<0.90	6.7	01/19/15 14:54	
Fluoranthene	ug/kg	<0.87	3.3	01/19/15 14:54	
Fluorene	ug/kg	<1.8	3.3	01/19/15 14:54	
Indeno(1,2,3-cd)pyrene	ug/kg	3.1J	3.3	01/19/15 14:54	
Naphthalene	ug/kg	<0.76	3.3	01/19/15 14:54	
Phenanthrene	ug/kg	<0.42	3.3	01/19/15 14:54	
Pyrene	ug/kg	<0.52	3.3	01/19/15 14:54	
2-Fluorobiphenyl (S)	%	79	59-130	01/19/15 14:54	
Terphenyl-d14 (S)	%	85	51-130	01/19/15 14:54	

LABORATORY CONTROL SAMPLE & LCSD: 1103381 1103385

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	18.2	21.6	54	65	50-140	17	40	
2-Methylnaphthalene	ug/kg	33.3	25.7	24.3	77	73	50-140	5	40	
Acenaphthene	ug/kg	33.3	25.1	23.1	75	69	55-130	8	40	
Acenaphthylene	ug/kg	33.3	25.1	23.2	75	70	48-130	8	40	
Anthracene	ug/kg	33.3	24.1	23.5	72	71	41-130	2	40	
Benzo(a)anthracene	ug/kg	33.3	32.0	27.4	96	82	50-130	15	40	
Benzo(a)pyrene	ug/kg	33.3	26.8	22.9	81	69	50-130	16	40	
Benzo(b)fluoranthene	ug/kg	33.3	26.4	19.8	79	60	50-130	28	40	
Benzo(g,h,i)perylene	ug/kg	33.3	25.4	22.0	76	66	20-130	14	40	
Benzo(k)fluoranthene	ug/kg	33.3	29.3	27.1	88	81	50-130	8	40	
Chrysene	ug/kg	33.3	24.7	22.4	74	67	55-130	10	40	
Dibenz(a,h)anthracene	ug/kg	33.3	24.6	23.3	74	70	33-130	5	40	
Fluoranthene	ug/kg	33.3	28.5	25.4	86	76	51-130	11	40	
Fluorene	ug/kg	33.3	27.1	24.6	81	74	55-130	10	40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

LABORATORY CONTROL SAMPLE & LCSD: 1103381 1103385

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	26.5	26.4	79	79	33-130	0	40	
Naphthalene	ug/kg	33.3	20.9	20.7	63	62	47-130	1	40	
Phenanthrene	ug/kg	33.3	29.3	26.5	88	79	49-130	10	40	
Pyrene	ug/kg	33.3	32.0	28.5	96	85	46-130	12	40	
2-Fluorobiphenyl (S)	%				93	84	59-130			
Terphenyl-d14 (S)	%				88	82	51-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25582 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight Reporting Only
Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014

SAMPLE DUPLICATE: 1103440

Parameter	Units	40108983001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	89.0	88.9	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25584 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight Reporting Only
Associated Lab Samples: 40108983015, 40108983016, 40108983017, 40108983018, 40108983019, 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

SAMPLE DUPLICATE: 1103455

Parameter	Units	40108983015 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	90.5	90.5	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25590 | Analysis Method: Pace Lipid
QC Batch Method: Pace Lipid | Analysis Description: LIPID

Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

METHOD BLANK: 1104133 | Matrix: Tissue

Associated Lab Samples: 40108983001, 40108983002, 40108983003, 40108983004, 40108983005, 40108983006, 40108983007, 40108983008, 40108983009, 40108983010, 40108983011, 40108983012, 40108983013, 40108983014, 40108983015, 40108983016, 40108983017, 40108983018, 40108983019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lipid	%	0.90		01/08/15 10:39	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 2290-00 STANTEC
Pace Project No.: 40108983

QC Batch: OEXT/25591 | Analysis Method: Pace Lipid
QC Batch Method: Pace Lipid | Analysis Description: LIPID
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

METHOD BLANK: 1104134 | Matrix: Tissue
Associated Lab Samples: 40108983020, 40108983021, 40108983022, 40108983023, 40108983024, 40108983025, 40108983026, 40108983027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lipid	%	0.82		01/08/15 10:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

BATCH QUALIFIERS

Batch: OEXT/25590

[1] A lipid duplicate was not performed for this batch due to insufficient sample volume.

Batch: OEXT/25591

[1] A lipid duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSSV/7553

[IP] Benzo(b)fluoranthene and benzo(k)fluoranthene were in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

[1] One compound above RDL in extraction blank; compound flagged in samples. Only projects that have been OK'd by clients are being reported.

Batch: GCSV/12459

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSSV/7559

[IP] Benzo(b)fluoranthene and benzo(k)fluoranthene were in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: GCSV/12486

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 2290-00 STANTEC
Pace Project No.: 40108983

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983001	**BKGD 100814 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983002	**CONTROL 100814 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983003	**10207 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983004	**10208 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983005	**10209 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983006	**10210 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983007	**10212 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983008	**10213 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983009	**10214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983010	**BKGD 102214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983011	**CONTROL 102214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983012	**10215 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983013	**10216 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983014	**10217 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983015	**10218 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983016	**10219 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983017	**10220 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983018	**10221 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983019	**BKGD 111214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983020	**CONTROL 111214 LUMB**	EPA 3541	OEXT/25575	EPA 8082A	GCSV/12486
40108983021	**10222 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983022	**10223 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983023	**10224 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983024	**10225 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983025	**10226 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983026	**10254 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983027	**10256 LUMB**	EPA 3541	OEXT/25576	EPA 8082A	GCSV/12459
40108983001	**BKGD 100814 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983002	**CONTROL 100814 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983003	**10207 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983004	**10208 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983005	**10209 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983006	**10210 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983007	**10212 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983008	**10213 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983009	**10214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983010	**BKGD 102214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983011	**CONTROL 102214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983012	**10215 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983013	**10216 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983014	**10217 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983015	**10218 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983016	**10219 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983017	**10220 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983018	**10221 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983019	**BKGD 111214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206
40108983020	**CONTROL 111214 LUMB**	EPA 3050B	MPRP/11294	EPA 6020	ICPM/5206

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983021	**10222 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983022	**10223 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983023	**10224 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983024	**10225 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983025	**10226 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983026	**10254 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983027	**10256 LUMB**	EPA 3050B	MPRP/11301	EPA 6020	ICPM/5210
40108983001	**BKGD 100814 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983002	**CONTROL 100814 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983003	**10207 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983004	**10208 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983005	**10209 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983006	**10210 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983007	**10212 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983008	**10213 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983009	**10214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983010	**BKGD 102214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983011	**CONTROL 102214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983012	**10215 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983013	**10216 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983014	**10217 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983015	**10218 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983016	**10219 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983017	**10220 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983018	**10221 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983019	**BKGD 111214 LUMB**	EPA 3540	OEXT/25577	EPA 8270 by SIM	MSSV/7553
40108983020	**CONTROL 111214 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983021	**10222 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983022	**10223 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983023	**10224 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983024	**10225 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983025	**10226 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983026	**10254 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983027	**10256 LUMB**	EPA 3540	OEXT/25578	EPA 8270 by SIM	MSSV/7559
40108983001	**BKGD 100814 LUMB**	ASTM D2974-87	OEXT/25582		
40108983002	**CONTROL 100814 LUMB**	ASTM D2974-87	OEXT/25582		
40108983003	**10207 LUMB**	ASTM D2974-87	OEXT/25582		
40108983004	**10208 LUMB**	ASTM D2974-87	OEXT/25582		
40108983005	**10209 LUMB**	ASTM D2974-87	OEXT/25582		
40108983006	**10210 LUMB**	ASTM D2974-87	OEXT/25582		
40108983007	**10212 LUMB**	ASTM D2974-87	OEXT/25582		
40108983008	**10213 LUMB**	ASTM D2974-87	OEXT/25582		
40108983009	**10214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983010	**BKGD 102214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983011	**CONTROL 102214 LUMB**	ASTM D2974-87	OEXT/25582		
40108983012	**10215 LUMB**	ASTM D2974-87	OEXT/25582		
40108983013	**10216 LUMB**	ASTM D2974-87	OEXT/25582		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2290-00 STANTEC
Pace Project No.: 40108983

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40108983014	**10217 LUMB**	ASTM D2974-87	OEXT/25582		
40108983015	**10218 LUMB**	ASTM D2974-87	OEXT/25584		
40108983016	**10219 LUMB**	ASTM D2974-87	OEXT/25584		
40108983017	**10220 LUMB**	ASTM D2974-87	OEXT/25584		
40108983018	**10221 LUMB**	ASTM D2974-87	OEXT/25584		
40108983019	**BKGD 111214 LUMB**	ASTM D2974-87	OEXT/25584		
40108983020	**CONTROL 111214 LUMB**	ASTM D2974-87	OEXT/25584		
40108983021	**10222 LUMB**	ASTM D2974-87	OEXT/25584		
40108983022	**10223 LUMB**	ASTM D2974-87	OEXT/25584		
40108983023	**10224 LUMB**	ASTM D2974-87	OEXT/25584		
40108983024	**10225 LUMB**	ASTM D2974-87	OEXT/25584		
40108983025	**10226 LUMB**	ASTM D2974-87	OEXT/25584		
40108983026	**10254 LUMB**	ASTM D2974-87	OEXT/25584		
40108983027	**10256 LUMB**	ASTM D2974-87	OEXT/25584		
40108983001	**BKGD 100814 LUMB**	Pace Lipid	OEXT/25590		
40108983002	**CONTROL 100814 LUMB**	Pace Lipid	OEXT/25590		
40108983003	**10207 LUMB**	Pace Lipid	OEXT/25590		
40108983004	**10208 LUMB**	Pace Lipid	OEXT/25590		
40108983005	**10209 LUMB**	Pace Lipid	OEXT/25590		
40108983006	**10210 LUMB**	Pace Lipid	OEXT/25590		
40108983007	**10212 LUMB**	Pace Lipid	OEXT/25590		
40108983008	**10213 LUMB**	Pace Lipid	OEXT/25590		
40108983009	**10214 LUMB**	Pace Lipid	OEXT/25590		
40108983010	**BKGD 102214 LUMB**	Pace Lipid	OEXT/25590		
40108983011	**CONTROL 102214 LUMB**	Pace Lipid	OEXT/25590		
40108983012	**10215 LUMB**	Pace Lipid	OEXT/25590		
40108983013	**10216 LUMB**	Pace Lipid	OEXT/25590		
40108983014	**10217 LUMB**	Pace Lipid	OEXT/25590		
40108983015	**10218 LUMB**	Pace Lipid	OEXT/25590		
40108983016	**10219 LUMB**	Pace Lipid	OEXT/25590		
40108983017	**10220 LUMB**	Pace Lipid	OEXT/25590		
40108983018	**10221 LUMB**	Pace Lipid	OEXT/25590		
40108983019	**BKGD 111214 LUMB**	Pace Lipid	OEXT/25590		
40108983020	**CONTROL 111214 LUMB**	Pace Lipid	OEXT/25591		
40108983021	**10222 LUMB**	Pace Lipid	OEXT/25591		
40108983022	**10223 LUMB**	Pace Lipid	OEXT/25591		
40108983023	**10224 LUMB**	Pace Lipid	OEXT/25591		
40108983024	**10225 LUMB**	Pace Lipid	OEXT/25591		
40108983025	**10226 LUMB**	Pace Lipid	OEXT/25591		
40108983026	**10254 LUMB**	Pace Lipid	OEXT/25591		
40108983027	**10256 LUMB**	Pace Lipid	OEXT/25591		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

CHAIN OF CUSTODY

RS

(Please Print Clearly)	
Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290-00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	M. Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City, MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

***Preservation Codes**
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (Now 12/23/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	PAHs EPA Method 8270D-SIM	PCBs EPA-8082	Metals As, Ba, Cd, Cr, Pb, Hg copper Nickel	Fee Mur 12/29/14	Moisture	Dioxins EPA 8290			CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	BKGD 100814 Lumb	10/8/14	1600	Tissue									~~Lab control~~ Background worms	1-4oz aq A	
002	Control 100814 Lumb	11/5-6/14	730-950										~~BKGD worms~~ Lab Control	1-8oz aq A	
003	10207 Lumb	11/5-6/14	9-1230										SS-1022-AT		
004	10208 Lumb	11/5-6/14	1045-1425										SS 1024-AT		
005	10209 Lumb	11/5-6/14	1500-1519										SS-1032-AT		
006	10210 Lumb	11/5-7/14	921-1821										SS-1021-AT		
007	10212 Lumb	11/5-7/14	834-1835										SS-1026-AT		
008	10213 Lumb	11/6-7/14	1100-1356										SS-1028-AT		
009	10214 Lumb	11/6-7/14	1315-1418										SS-1025-AT		
010	BKGD 102214 Lumb	10/22/14	1530										Background worms	1-4oz aq A	
011	Control 102214 Lumb	11/19-20/14	0745-0833										Control Lab.		
012	10215 Lumb	11/19-20/14	945-1035										SS-1010-AT		
013	10216 Lumb	11/19-20/14	1100-1010	Tissue									SS-1029-AT		

FILTERED? (YES/NO) — Y/N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By:	Date/Time:	Received By:	Date/Time:
	Maile W Garton	12/29/14 0830		
Transmit Prelim Rush Results by (complete what you want):	Relinquished By: Fed Ex	Date/Time: 12/30/14 1030	Received By:	Date/Time: 12/30/14 1030
Email #1:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Email #2:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Telephone:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Fax:				

Samples on HOLD are subject to special pricing and release of liability

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231) 941-2230
Project Number:	2290
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Marlee Garton
PO #:	Regulatory Program:

Quote #:	40108983
Mail To Contact:	Dennis McCauley
Mail To Company:	GLEL
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
Sl = Sludge	WP = Wipe

FILTERED? (YES/NO) — Y/N
PRESERVATION (CODE)* — Pick Letter

Analyses Requested: EPA PAHs 8270D-SIM; EPA 8082 PCBs; As, Ba, Cd, Cr, Pb, Hg Metals copper, Nickel; TOC (new 12/29/14); Moisture; Dioxins EPA 8290

PACE LAB #	LAB ~~CLIENT FIELD~~ ID (new 12/29/14)	COLLECTION DATE	COLLECTION TIME	MATRIX	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
014	10217 Lumb	11/19-20/14	1315-1610	Tissue	SS-1001-AT	1-8ozag A	
015	10218 Lumb	11/19-20/14	1445-1630		SS-1042-AT		
016	10219 Lumb	11/19-21/14	1048-1720		SS 1009-AT		
017	10220 Lumb	11/20-21/14	922-1030		SS 1017-AT		
018	10221 Lumb	11/20-21/14	1300-1340		SS 1011-AT		
019	BKGD 11/12/14 Lumb	11/12/14	1535		Background wells	C 1-4ozag A	
020	Control 11/12/14 Lumb	12/10-11/14	845-1200		Lab Control		
021	10222 Lumb	12/10-11/14	1030-1205		SS 1031-AT		
022	10223 Lumb	12/10-11/14	1231-1400		SS 1033-AT		
023	10224 Lumb	12/10-11/14	1300-1540		SS 1034-AT		
024	10225 Lumb	12/10-11/14	1500-1605		SS 1002-AT		
025	10226 Lumb	12/10-11/14	1630-1630		SS 1005-AT		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Marlee Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[signature]	12/30/14 1030

PACE Project No. 40108983

Receipt Temp = 0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Great Lakes Environmental
Branch/Location:	Traverse City MI
Project Contact:	Dennis McCauley
Phone:	(231)-941-2230
Project Number:	2290.00
Project Name:	Stantec
Project State:	
Sampled By (Print):	M. Garton
Sampled By (Sign):	Mark Garton
PO #:	Regulatory Program:

Quote #: 40108983

Mail To Contact:	Dennis McCauley
Mail To Company:	GLEC
Mail To Address:	739 Hastings St. Traverse City MI 49686
Invoice To Contact:	See above
Invoice To Company:	See above
Invoice To Address:	See above
Invoice To Phone:	(231) 941-2230

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) — Y / N
PRESERVATION (CODE)* — Pick Letter

PACE LAB #	LAB ~~CLIENT FIELD~~ ID	COLLECTION DATE	COLLECTION TIME	MATRIX	PAHs EPA 8270D-Sim	PCBs EPA 8082	Metals As, Ba, Cd, Copper Cr, Pb, Hg, Nickel	PFC	Moisture	Dioxins EPA 8290D	CLIENT ID COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
026	10254 Lumb	12/10-12/14	1518-900	Tissue	↓	↓	↓	↓	↓	↓	SS 1041-AT	1-8oz agA	
027	10256 Lumb	12/11-12/14	1030-1230	Tissue							SS 1012-AT	↓	

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mark Garton	12/29/14 0830		
Fed Ex	12/30/14 1030	[illegible]	12/30/14 1030

PACE Project No. 40108983
Receipt Temp = 0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

40108983

Metals to be analyzed - arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc using EPA Method 6010/7474. These are not the RCRA metals. At our request **PACE quoted Metals by ICP-MS - (As, Ba, Cd, Cr, Pb, Hg, Se, Ag) (soil/solid). We will need to add copper and nickel to the list and do not need Se and Ag.**

PCB using EPA Method 8082; **PACE quoted Method 8082 also. OK**

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270**

17 Dioxin isomers – I see that you indicated analyzing using EPA method 1613B. We are using EPA Method 8290 for the soil/sediment analysis.

PAHs using EPA Method 8270D-SIM; **PACE quoted EPA 8270.** 8270 SIM has lower detection limits, and is essentially a second 8270 run. If this is needed, the price does increase slightly. Generally 8270D-SIM is NOT run unless these limits are needed.

For the Dioxin in Tissue, we can analyze by 8290 instead of 1613B, there will not be difference in price.

Please use the listed Methods for analysis

Sample Condition Upon Receipt

Pace Analytical

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40108983

40108983

Client Name: Great Lakes Env.

Courier: ☒ Fed Ex ☐ UPS ☐ Client ☐ Pace Other: _____

Tracking #: 9802 5316 3260

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used JR-47 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0 /Corr: 0 **Biological Tissue is Frozen:** ☒ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Person examining contents:
Date: 12/30/14
Initials: RS

		Comments:
Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time:
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☒ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: Bio		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐ Yes ☐ No ☒ N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐ Yes ☐ No ☒ N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐ Yes ☒ No	Initial when completed / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____ If checked, see attached form for additional comments ☐
Comments/ Resolution: _____

Project Manager Review: Amt for TN **Date:** 12/30/14

F-GB-C-031-Rev.02 (28Oct2013) SCUR Form

APPENDIX D:

SEDIMENT AND TISSUE ANALYTICAL CHEMISTRY VALIDATION REPORTS

Stantec Analytical Validation Checklist — Report No. 031215-EC-01

Project Name: 40th Avenue	Project Number: 193702726 200
Stantec Validator: Elizabeth Crowley	Laboratory: Pace Analytical services, Minneapolis, MN
Date Validated: 03/05/15	Laboratory Project Number: 40108983
Sample Start-End Date: 10/08/14, 11/06-11/07/14, 10/22/14, 11/20-11/21/14, 11/12/14 and 12/11-12/12/14	Laboratory Report Date: 01/21/15

Parameters Validated: Poly Chlorinated Dioxins and Poly Chlorinated Furans by EPA SW-846 8290 modified

Associated Chain(s) of Custody/Samples validated – COC has no numbers/ 27 tissue samples

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
B The analyte was detected in the method, field and/or trip blank.
NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	X	
Comments: Laboratory report "Case Narrative" reports quality issues. This report addresses these issues in the specific sections to follow.		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?	X	

Comments: Batch 43557 – 2,3,4,7,8-PeCDF = 0.077 ng/Kg, Total PeCDF = 0.077 ng/Kg, Total HxCDF = 0.059 ng/Kg, 1,2,3,4,7,8,9 -HpCDF = 0.096 ng/Kg, Total HpCDF = 0.096 ng/Kg and OCDF = 0.230 ng/Kg. Batch 43659 – 2,3,4,6,7,8-HxCDF = 0.041 ng/Kg, Total HpCDF = 0.051 ng/Kg and OCDD = 0.200 ng/Kg. Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration and less than 10 times the blank concentration are flagged "JB". The reporting limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action. Reason Code – MB			
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	NA	Yes	No
Comments: No blank samples submitted. No qualifying action required.			
9. Were instrument calibrations within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
10. Were qualifiers assigned by the laboratory for quality issues?		Yes X	No
Comments: The laboratory assigned J flags to the sample results for ion abundance ratios out of limits and other undefined issues to denote the values are estimates. Associated results flagged "J". Reason Code – LESTQ			
11. Were laboratory control sample recoveries within control limits?		Yes X	No
Comments:			
12. Were site specific matrix spike recoveries within control limits?	NA	Yes	No
Comments: No matrix spike data provided.			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes X	No
Comments: No qualifying action taken.			
15. Were Tentatively Identified Compounds (TIC) present?		Yes	No X
Comments:			
16. Were organic system ion abundance performance criteria met?		Yes	No X

Comments: The method required ion abundance ratios were out of limits for multiple analytes in multiple samples. Associated sample results are flagged "J". Reason Code – IAR			
17. Were internal standards within method criteria?		Yes	No X
Comments: Internal standard are below ±60% limits for CONTROL 102214 for OCDD. Associated sample results flagged "J". The internal standard for OCDD and 1,2,3,4,7,8,9-HpCDF are below the 40% limit for 10218 LUMB. Associated sample results flagged "J" if positive or "UJ" if non-detect. Reason Code – IS			
18. Were inorganic system performance criteria met?	NA	Yes	No
Comments: No inorganic analysis requested.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample No. Primary Sample No.		Yes	No X
Comments:			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?		Yes X	No Initials EAC
Comments:			
21. Other: Level of Validation		Yes X	No
Comments: Level II data validation			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC

Comments:

Stantec Analytical Validation Checklist — Report No. 031215-EC-03

Project Name: 40th Avenue	Project Number: 193702726 200
Stantec Validator: Elizabeth Crowley	Laboratory: Pace Analytical Services – Minneapolis, MN
Date Validated: 03/04-03/09/15	Laboratory Project Number: 10281597
Sample Start-End Date: 09/15-09/19 and 10/01/14	Laboratory Report Date: 10/15/14

Parameters Validated: Metals by EPA SW 846 6020, and 7471A, PCBs by 8082, Poly Aromatic Hydrocarbons by 8270C-SIM, Sulfide by SM4500-S2-D and Ammonia by EPA 350.1.

Associated Chain(s) of Custody/Samples validated – COC has no numbers/ 84 field sediment and water samples and 4 Equipment Blanks

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
B The analyte was detected in the method, field and/or trip blank.
NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	X	
Comments: Laboratory report "Case Narrative" reports minor issues.		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments		
5. Were sample holding times met?		X
Comments: 8270 SIM batch OEXT/26651 – All samples extracted past the 14 day to extraction holding time. Associated sample results flagged "J" if positive or "UJ" if non-detect. Sample results are considered biased low. Reason Code - HT		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?		

		X
Comments:		
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	Yes X	No
Comments: EB-04-CH – Phenanthrene = 0.0096 µg/L. Associated sample results non-detect or greater than 10 times the blank concentration. No qualifying action required.		
9. Were instrument calibrations within method criteria?	Yes NA	No
Comments: Level II data package, no data provided.		
10. Were surrogate recoveries within control limits?	Yes	No X
Comments: 8270 SIM - %R below ±40% average limits for SS 1032-CH (15CM), SS1034-CH (15CM), SS1034-CH (50CM), SS1012-CH (50CM) and SS1011-CH (100CM). Associated sample results flagged "J" if positive or "UJ" if non-detect. Reason Code - SUR		
11. Were laboratory control sample recoveries within control limits?	Yes	No X
Comments: 8270 SIM batch 26811 - %Rs below ±40% limits for Acenaphthene, Acenaphthylene, and Fluorene. Associated sample results flagged "J" if positive or "UJ" if non-detect. Batch 26811 - %R below 10% for Naphthalene. Associated result flagged "R". Reason Code – LCS		
12. Were site specific matrix spike recoveries within control limits?	Yes	No X

Comments: 6010C batch 49157 - %Rs below ±20% limit for Zinc. Associated result flagged “J” for SS 1022-CH (15cm) only.

Batch 49364 - %R below ±20% limit for Lead. Associated result flagged “J” for SS1033-CH (15cm) only.

8270 SIM batch 26574 - %Rs below the ±40% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Fluoranthene and Pyrene. Associated results flagged “J” if positive or “UJ” if non-detect for SS 1022-CH (15cm) only.

Batch 26645 - %Rs below ±40% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene and Pyrene. Associated results flagged “J” if positive or “UJ” if non-detect for SS 1042-CH (15cm) only.

Batch 26651 - %Rs above ±40% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Fluoranthene and Pyrene. Associated results flagged “J” for SS 1001-CH (50cm) only.

Batch 26717 - %Rs above ±40% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Fluoranthene and Pyrene. Associated results flagged “J” if positive or “UJ” if non-detect for SS1002-CH (50cm) only.

Reason Code – MS

13. Were RPDs within control limits?	Yes	No
		X

Comments: 6010C batch 49180 – Matrix spike RPD above ±20% limit for Arsenic, Cadmium, Copper, Lead and Nickel. Matrix sample site specific. Associated positive sample results flagged “J”.

8270 SIM batch 26574 – Matrix spike RPD above ±30% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Fluoranthene, Indeno(1,2,3-cd)pyrene and Pyrene. Matrix spike sample site specific. Associated positive results flagged “J”.

Batch 26651 - Matrix spike RPD above ±30% limit for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Fluoranthene, Naphthalene and Pyrene. Matrix spike sample site specific. Associated positive results flagged “J”.

Reason Code – MD

14. Were dilutions required on any samples?	Yes	No
	X	

Comments: No qualifying action taken.

15. Were Tentatively Identified Compounds (TIC) present?	Yes	No
		X

Comments:

16. Were organic system performance criteria met?	Yes	No
NA		

Comments: Level II data package, no data provided.

17. Were internal standards within method criteria?		Yes	No
	NA		
Comments: Level II data package, no data provided.			
18. Were inorganic system performance criteria met?		Yes	No
	NA		
Comments: Level II data package, no data provided.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.		Yes	No
		X	

Duplicate Sample No.	Primary Sample No.	
DUP-01-CH	SS 1023-CH (50cm)	Pair 1
DUP-02-CH	NSW 1041-CH	Pair 2
DUP-03-CH	SS1037-CH (100cm)	Pair 3

Comments: Pair 1 – RPDs within limits for PCBs and metals. RPD above limits for 14 of 22 analytes. Associated results flagged "J" for duplicate samples only.

Pair 2 – All RPDs within limits.

Pair 3 – RPDs within limits for PCBs and metals. RPD above limits for 18 of 22 analytes. Associated results flagged "J" if positive or "UJ" if non-detect for duplicate samples only.

Reason Code – FDUP

20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes	No	Initials
	X		EAC
Comments:			
21. Other: Level of Validation	Yes	No	
	X		
Comments: Level II data validation			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist — Report No. 031215-EC-04

Project Name: 40th Avenue	Project Number: 193702726 200
Stantec Validator: Elizabeth Crowley	Laboratory: Pace Analytical Services – Green Bay, WI
Date Validated: 03/05/15	Laboratory Project Number: 40104743
Sample Start-End Date: 09/16/14	Laboratory Report Date: 10/21/14

Parameters Validated: Percent Sand, Silt, clay by ASA 15-5 mod, Total Organic Carbon by Walkley Black and Percent Moisture by ASTM D2974-87

Associated Chain(s) of Custody/Samples validated – COC has no numbers/ 21 soil samples

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
B The analyte was detected in the method, field and/or trip blank.
NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	X	
Comments: Laboratory report "Case Narrative" reports minor issues.		
3. Were sample Chain-of-Custody forms complete?		X
Comments: No analysis was requested on the CofC. Requested analyses communicated by telephone. No qualifying action required.		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?		X
Comments:		

8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	NA	Yes	No
Comments: No blank sample submitted, no qualifying action required.			
9. Were instrument calibrations within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
10. Were surrogate recoveries within control limits?	NA	Yes	No
Comments: No analysis requiring surrogates requested.			
11. Were laboratory control sample recoveries within control limits?		Yes X	No
Comments:			
12. Were site specific matrix spike recoveries within control limits?		Yes X	No
Comments:			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes	No X
Comments:			
15. Were Tentatively Identified Compounds (TIC) present?		Yes	No X
Comments:			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: Level II data package, no data provided.			
17. Were internal standards within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
18. Were inorganic system performance criteria met?	NA	Yes	No
Comments: Level II data package, no data provided.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample No. Primary Sample No.		Yes	No X
Comments:			

20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other: Level of Validation	Yes X	No	
Comments: Level II data validation			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist — Report No. 031215-EC-02

Project Name: 40th Avenue	Project Number: 193702726 200
Stantec Validator: Elizabeth Crowley	Laboratory: Pace Analytical Services – Green Bay, WI
Date Validated: 03/05/15	Laboratory Project Number: 40108983
Sample Start-End Date: 10/08/14, 11/06-11/07/14, 10/22/14, 11/20-11/21/14, 11/12/14 and 12/11-12/12/14	Laboratory Report Date: 01/30/15

Parameters Validated: Metals by EPA SW 846 6020, PCBs by 8082, Poly Aromatic Hydrocarbons by 8270C-SIM and Lipids by Pace Lipid.

Associated Chain(s) of Custody/Samples validated – COC has no numbers/ 27 tissue samples

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
B The analyte was detected in the method, field and/or trip blank.
NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	X	
Comments: Laboratory report "Case Narrative" reports minor issues.		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?	X	

Comments: 8270 SIM batch 25577 – Indeno(1,2,3-cd)pyrene = 4.9 µg/Kg. Batch 25578 – Indeno(1,2,3-cd)pyrene = 3.1 µg/Kg. Lipids batch 25590 – Lipids = 0.9%. Batch 25591 – Lipids = 0.82%. Associated sample results below the blank concentration are validated to non-detect and flagged “UJB”. Sample results greater than the blank concentration and less than 10 times the blank concentration are flagged “JB”. The reporting limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action. Reason Code – MB			
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	NA	Yes	No
Comments: No blank sample submitted, no qualifying action required.			
9. Were instrument calibrations within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
10. Were surrogate recoveries within control limits?		Yes X	No
Comments:			
11. Were laboratory control sample recoveries within control limits?		Yes	No X
Comments: 8270 SIM batch 25578 - %Rs below limits for 1-Methylnaphthalene. Associated sample results flagged “J” if positive or “UJ” if non-detect. Reason Code – LCS			
12. Were site specific matrix spike recoveries within control limits?		Yes X	No
Comments:			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes X	No
Comments: No qualifying action taken.			
15. Were Tentatively Identified Compounds (TIC) present?		Yes X	No
Comments: Sample results below the reporting limit do not possess the degree of qualitative or quantitative confidence required. The value may be a false positive and is an estimated value and is flagged “NJ”. Reason Code – SQL			
16. Were organic system performance criteria met?		Yes	No

	NA		
Comments: Level II data package, no data provided.			
17. Were internal standards within method criteria?		Yes	No
	NA		
Comments: Level II data package, no data provided.			
18. Were inorganic system performance criteria met?		Yes	No
	NA		
Comments: Level II data package, no data provided.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.		Yes	No X
Duplicate Sample No. Primary Sample No.			
Comments:			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other: Level of Validation		Yes X	No
Comments: Level II data validation			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as flagged.			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

APPENDIX E:

PACE ANALYTICAL LETTERS

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302
Phone: 920-469-2436
Fax: 920-469-8827

February 9, 2015

Mr. Dennis McCauley
President/Principal Research Scientist
Great Lakes Environmental Center, Inc.

Dear Mr. McCauley:

The Pace Analytical Services, Inc – Green Bay Laboratory completed the analysis for Pace Project 40108983 Polyaromatic Hydrocarbons (PAH) in the biological tissue matrix by EPA 8270C SIM utilizing the EPA 3540C extraction method. Prior to analysis, the samples and associated quality control standards are additionally processed through the EPA method 3640A Gel Permeation Chromatography (GPC). This is a size exclusion clean-up procedure using organic solvents and hydrophobic gels in the separation of synthetic macromolecules and is a recommended method for the elimination of lipids and similar components in solid sample extracts.

While method EPA 3640A effectively removes a large majority of the lipid interferences, it is still present in the chromatograms after the procedure has been completed. The lipids peak contains the primary ion 276 and secondary ion 138; which is also the ions used in the identification of Ideno(1,2,3-cd) pyrene. The lipids peak elutes just before the expected retention time of Ideno(1,2,3-cd)pyrene, and dependent upon the area of the lipid peak, it may tail. This tailing causes a shift in the expected retention times of all subsequent compounds; however they are still within the appropriate retention time windows. The EPA 8270C SIM procedure identifies compounds based on the primary and secondary ions and retention time in the chromatograms. The laboratory chromatograms for these samples contain the primary and secondary ions within the expected retention time window for Indeno(1,2,3-cd)pyrene. Based on analyst judgment, they are quantitated as positive detections and given the B data qualifier. Due to limitations of the selective ion monitoring mode, the laboratory is unable to determine if the Indeno(1,2,3-cd)pyrene detections are attributed to the lipid interference.

If you have any questions or comments, please do not hesitate to contact me at (920) 469-2436 or via E-mail at Kate.Grams@pacelabs.com.

Respectfully,

Kate E. Grams

Kate E. Grams
Quality Manager
Pace Analytical Services, Inc. – Green Bay Laboratory

REVISED on 2/20/15, with an original submission date of January 13, 2015

Pace WO #10281597

David Constant – Stantec

David,

Per your request this letter has been altered to incorporate responses from both Melanie Ollila, Quality Assurance officer (Part 1) and Chris Bremer Environmental Technical Director/Client Services Manager (Part 2). Regards, Jeff Smith, Pace Analytical , 2/20/15.

Part 1. I have received an explanation as to how this happened from our Quality Assurance officer, Melanie Ollila. Please see the following;

"On 9/29/14 these samples were batched by a technician in the organics prep lab. The technician was batching multiple batches to be weighed out for extractions during that shift. After being batched the extraction sheet was misplaced by the technician causing the batch to appear in the Lab Information system (LIMs sytem) as though it was in process even though the samples were never weighed or extracted.

Early this week it was discovered that extracts for this batch seemed to be missing from the analytical area. Upon investigation the error was discovered. The organics prep lab technician then initiated a corrective action and notified the Project Managers of the error. As part of our corrective action to ensure that this does not happen again, training will be conducted with all Organic Prep lab staff by 10/13/14. This training will cover not batching another batch until samples are retrieved and in-process for the current batch."

Part 2. On October 13, 2014 Jeff Smith contacted you regarding 11 soil samples in the above work order that were extracted past the recommended holding time for poly aromatic hydrocarbons (PAH). This was the result of human error in our organic prep laboratory.

The question arose as to the “validity” of the data itself. While this is difficult to assess as validity is up to the data user, I can tell you a few things about the data.

All data was performed as per method specifications and Pace Analytical Standard Operating Procedures with the obvious exception of the holding time exceedence for the 11 samples. All data was 100% peer reviewed as per Pace and NELAC specifications. All of the 11 samples had detectable levels of PAHs present. The samples were stored under proper cold storage at <6 C but above freezer and in the dark

until extraction. As PAHs are light sensitive compounds the proper storage helps assure minimal losses during storage.

The reported PAH results for these samples potentially may be biased low. It is my opinion that the sample concentrations would have not increased dramatically if they would have been extracted within the method holding time.

Please let me know if you have any questions.

Sincerely,

Chris Bremer

Environmental Technical Director/Client Services Manager

APPENDIX F:

PACE ANALYTICAL CHEMISTRY RESULTS BULK CHEMISTRY

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Dave Constant
Stantec Consulting Services Inc.
2335 Hwy 36 W
Saint Paul MN 55113

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10281617
Sample Receipt Date: 09/16/2014
Client Project #: 193702726.200
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

October 28, 2014

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
October 28, 2014

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on seventy-five samples submitted by a representative of Stantec. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. Sample "SS 1027-CH (50cm)" was extracted outside of the 30-day hold time recommended in the method, therefore, the values reported for this sample should be regarded as minimum possible concentrations.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-148%. Except for eleven values, which were flagged "R" on the results tables, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates. Values obtained from analyses of diluted extracts were flagged "D".

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory and matrix spike samples were also prepared with the sample batches using clean sand or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 72-130% with relative percent differences of 0.0-19.4%. Selected background-subtracted recovery values obtained for 1,2,3,6,7,8-HxCDD, 1,2,3,4,6,7,8-HpCDF, HpCDD, and OCDD in the matrix spike sample analyses were outside of the 70-130% target range. Matrix spikes were prepared with the 10/07/2014 and 10/09/2014 extraction batches using sample materials from separate projects; results from these analyses will be provided upon request. Matrix spikes were not prepared with the 10/22/2014 extraction batch.

The responses obtained for the labeled OCDD in calibration standard analyses F141001B_20 and F141002B_18 were outside the target range. As specified in the method, the averages of the daily response factors for this compound were used in the calculations for the samples from these runshifts. The affected values were flagged "Y" on the results tables.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q
Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1022-CH (15cm)			9-16-14	0830				5	5								X	X	X	X			X						001
2	SS 1022-CH (50cm)				0840				5	5								X	X	X	X			X						002
3	SS 1022-CH (100cm)				0850				5	5								X	X	X	X			X						003
4	SS 1023-CH (15cm)				0930				5	5								X	X	X	X			X						004
5	SS 1023-CH (50cm)				0940				5	5								X	X	X	X			X						005
6	SS 1024-CH (15cm)				1015				5	5								X	X	X	X			X						006
7	SS 1024-CH (50cm)				1025				5	5								X	X	X	X			X						007
8	SS 1024-CH (100cm)				1035				5	5								X	X	X	X			X						008
9	SS 1025-CH (15cm)				1120				5	5								X	X	X	X			X						009
10	SS 1025-CH (50cm)				1130				5	5								X	X	X	X			X						010
11	SS 1025-CH (100cm)				1140				5	5								X	X	X	X			X						011
12	DUP-01-CH				—				5	5								X	X	X	X			X						012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-16-14	1255	[illegible]	9/16/14	1255		Y		
** All 17 isomers using high resolution 8290	[illegible]	9/16/14	1535	[illegible]	9/16/14	1535				
	[illegible]	9/16/14	1822	[illegible] Pace	9/16/14	1822	3.0	Y	N	X
							1.0			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/16/14

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
0.3			

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information

Company	Stantec
Address	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone	507.529.6045
Fax	507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information

Report To:	David Constant
Copy To:	
Purchase Order No:	
Project Name:	40th Avenue Project - Duluth
Project Number	193702726.200

Section C Invoice Information

Attention:	David Constant
Company Name	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1032-CH (15cm)	SL	C	9-15-14	1545				5	5								X	X	X	X			X		013
2	SS 1032-CH (50 cm)	SL	C	9-15-14	1610				5	5								X	X	X	X			X		014
3	SS 1032-CH (100 cm)	SL	C	9-15-14	1615				5	5								X	X	X	X			X		015
4	SS 1030-CH (15cm)	SL	C	9-15-14	1700				5	5								X	X	X	X			X		016
5	SS 1030-CH (50cm)	SL	C	9-15-14	1710				5	5								X	X	X	X			X		017
6	SS 1021-CH (15cm)	SL	C	9-15-14	1745				5	5								X	X	X	X			X		018
7	SS 1021-CH (50cm)	SL	C	9-15-14	1755				5	5								X	X	X	X			X		019
8	SS 1021-CH (100 cm)	SL	C	9-15-14	1800				5	5								X	X	X	X			X		020
9	EB-01-CH	WT		9-15-14	1830				2	2									X							
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-16-14	1255	[illegible]	9/16/14	1255		Y		
** All 17 isomers using high resolution 8290	[illegible]	9/16/14	1535	[illegible]	9/16/14	1535				
	[illegible]	9/16/14	1802	[illegible]	9/16	1802	3.0 / 1.0	Y	N	Y

SAMPLER NAME AND SIGNATURE	[signature]
PRINT Name of SAMPLER:	Matthew Pontier
SIGNATURE of SAMPLER:	Matthew Pontier
DATE Signed (MM/DD/YY):	09/16/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Section A Required Client Information

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone:	507.529.6045 Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: MN

Report No....10281617_8290

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW, WATER WT, WASTE WATER WW, PRODUCT P, SOLID/SOIL SL, OIL OL, WIPE WP, AIR AR, OTHER OT, TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1026-CH (15cm)	SL		9-16-14	1420				5	5								X	X	X	X			X							021
2	SS 1026-CH (50cm)	SL		9-16-14	1430				5	5								X	X	X	X			X							022
3	SS 1026-CH (100cm)	SL		9-16-14	1440				5	5								X	X	X	X			X							023
4	SS 1028-CH (15cm)	SL		9-16-14	1510				5	5								X	X	X	X			X							024
5	SS 1028-CH (50cm)	SL		9-16-14	1515				5	5								X	X	X	X			X							025
6	SS 1028-CH (100cm)	SL		9-16-14	1520				5	5								X	X	X	X			X							026
7	SS 1028-CH (200cm)	SL		9-16-14	1525				5	5								X	X	X	X			X							027
8	SS 1027-CH (15cm)	SL		9-16-14	1620				5	5								X	X	X	X			X							028
9	SS 1027-CH (50cm)	SL		9-16-14	1625				5	5								X	X	X	X			X							029
10	SS 1027-CH (100cm)	SL		9-16-14	1630				5	5								X	X	X	X			X							030
11	SS 1027-CH (200cm)	SL		9-16-14	1635				5	5								X	X	X	X			X							031
12	EB-02-CH	WT		9-16-14	1700				2	2									X												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245		Y		
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550				
WORK ORDER # 10281597		9/17/14	1827		9/17/14	1827		Y	N	X
DIOXIN WORK ORDER# 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/16/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER ____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1029 - CH (15cm)	SL	C	9-17-14	0820				5	5									X	X	X	X			X		032
2	SS 1029 - CH (50cm)	SL	C	9-17-14	0825				5	5									X	X	X	X			X		033
3	SS 1029 - CH (100cm)	SL	C	9-17-14	0830				5	5									X	X	X	X			X		034
4	SS 1029 - CH (200cm)	SL	C	9-17-14	0835				5	5									X	X	X	X			X		035
5	SS 1042 - CH (15cm)	SL	C	9-17-14	0925				5	5									X	X	X	X			X		036
6	SS 1042 - CH (50cm)	SL	C	9-17-14	0930				5	5									X	X	X	X			X		037
7	SS 1042 - CH (50cm) - MS	SL	C	9-17-14	0930				5	5									X	X	X	X			X		
8	SS 1042 - CH (50cm) - MSD	SL	C	9-17-14	0930				5	5									X	X	X	X			X		037
9	SS 1010 - CH (15cm)	SL	C	9-17-14					5	5									X	X	X	X			X		038
10	SS 1010 - CH (50cm)	SL	C	9-17-14					5	5									X	X	X	X			X		039
11	SS 1010 - CH (100cm)	SL	C	9-17-14					5	5									X	X	X	X			X		040
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245	Y
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550	
WORK ORDER # 10281597		9/17/14	1827		9/17/14	1827	Y N Y
DIOXIN WORK ORDER # 10281617							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier — DATE Signed (MM/DD/YY): 09/17/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 3 of 3

Section A Required Client Information:

Company: Stantec
Address: 6188 Rome Circle NW
Rochester, MN 55901
Email To: david.constant@stantec.com
Phone: 507.529.6045 Fax: 507.282.3100
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: David Constant
Copy To:
Purchase Order No.:
Project Name: 40th Avenue Project - Duluth
Project Number: 193702726.200

Section C Invoice Information:

Attention: David Constant
Company Name: Stantec
Address: 6188 Rome Circle NW Rochester, MN 55901
Pace Quote Reference:
Pace Project Manager: Kabor Xiong
Pace Profile #

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	MOISTURE	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1001-CH (15cm)	SL	C	9-17-14	1150				5	5									X	X	X	X		•	X		041
2	SS 1001-CH (50cm)	SL	C	9-17-14	1155				5	5									X	X	X	X			X		042
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245		Y		
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550				
WORK ORDER # 1028 1597		9/17/14	1827	Pace	9/17/14	1827	Y	N	Y	
DIOXIN WORK ORDER # 1028 1617										

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/17/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days

F-ALL-Q-020rev 08, 12-Oct-2007

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 1 of 1

Section A Required Client Information

Company	Stantec
Address	6188 Rome Circle NW
	Rochester, MN 55901
Email To	david.constant@stantec.com
Phone	507.529.6045
Fax	507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information

Report To	David Constant
Copy To	
Purchase Order No.	
Project Name	40th Avenue Project - Duluth
Project Number	193702726.200

Section C Invoice Information

Attention	David Constant
Company Name	Stantec
Address	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference	
Pace Project Manager	Kabor Xiong
Pace Profile #	

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW, WATER WT, WASTE WATER WW, PRODUCT P, SOIL/SOLID SL, OIL OL, WIPE WP, AIR AR, OTHER OT, TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1033-CH (15cm)	SL	C	9-18-14	0840				5	5								X	X	X	X			X		043 ~~001~~
2	SS 1033-CH (50 cm)	SL	C	9-18-14	0845				5	5								X	X	X	X			X		044
3	SS 1033-CH (100 cm)	SL	C	9-18-14	0850				5	5								X	X	X	X			X		045
4	SS 1034-CH (15cm)	SL	C	9-18-14	0925				5	5								X	X	X	X			X		046
5	SS 1034-CH (50cm)	SL	C	9-18-14	0930				5	5								X	X	X	X			X		047
6	SS 1034-CH (100cm)	SL	C	9-18-14	0935				5	5								X	X	X	X			X		048
7	SS 1031-CH (15cm)	SL	C	9-18-14	1005				5	5								X	X	X	X			X		049
8	SS 1031-CH (50cm)	SL	C	9-18-14	1010				5	5								X	X	X	X			X		050
9	SS 1031-CH (100cm)	SL	C	9-18-14	1015				5	5								X	X	X	✓			X		051
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-18-14	1110				
** All 17 isomers using high resolution 8290					9/18/14	1610	Y
WORK ORDER # 10281597		9/18/14	1848		9-18	1848	Y N Y
WORK ORDER # 10281617							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier — DATE Signed (MM/DD/YY): 09/18/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12 Oct 2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 1 of 1

Section A Required Client Information:
Company: Stantec
Address: 6188 Rome Circle NW
Rochester, MN 55901
Email To: david.constant@stantec.com
Phone: 507.529.6045 Fax: 507.282.3100
Requested Due Date/TAT: Standard

Section B Required Project Information:
Report To: David Constant
Copy To:
Purchase Order No
Project Name: 40th Avenue Project - Duluth
Project Number: 193702726.200

Section C Invoice Information:
Attention: David Constant
Company Name: Stantec
Address: 6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:
Pace Project Manager: Kabor Xiong
Pace Profile #:

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER
Site Location STATE: MN

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW, WATER WT, WASTE WATER WW, PRODUCT P, SOIL/SOLID SL, OIL OL, WIPE WP, AIR AR, OTHER OT, TISSUE TS

SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	PCB (EPA 8082)	PAH (8270SIM)	**Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS1041-CH (15cm)	SL	C	9-19-14	0825				5	5									X	X	X	X			X		10281617 001 057
2	SS1041-CH (50cm)	SL	C	9-19-14	0830				5	5									X	X	X	X			X		002 053
3	NSW1041-CH	WT	G	9-19-14	0925				2	1	1												X	X			SULFIDE IS UNPRESERVED 054
4	SS1004-CH (15cm)	SL	C	9-19-14	1045				5	5									X	X	X	X			X		003 054 055
5	SS1004-CH (50cm)	SL	C	9-19-14	1050				5	5									X	X	X	X			X		004 055
6	NSW1004-CH	WT	G	9-19-14	1115				2		1						1						X	X			
7	SS1012-CH (15cm)	SL	C	9-19-14	1135				5	5									X	X	X	X			X		056
8	SS1012-CH (50cm)	SL	C	9-19-14	1140				5	5									X	X	X	X			X		057
9	NSW1012-CH	WT	G	9-19-14	1225				2		1						1						X	X			
10	NSW1016-CH	WT	G	9-19-14	1250				2		1						1						X	X			
11	DUP-02-CH	WT	G	9-19-14	—				2	1	1												X	X			SULFIDE IS UNPRESERVED
12	EB-03-CH	WT	-	9-19-14	1430				2	2										X							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / Stantec	9-19-14	1515		9/19/14	1515	1.3	Y	N	Y
** All 17 isomers using high resolution 8290		9/19/14	1600		9/19/14	1600	4.5	Y	N	Y
WORK ORDER # 10281597		9/19/14	1945		9/19/14	1945		Y		
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Matthew Pontier
SIGNATURE of SAMPLER: Matthew Pontier
DATE Signed (MM/DD/YY): 09/19/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 1 of 1

Section A Required Client Information:

Company	Stantec
Address	6188 Rome Circle NW
	Rochester, MN 55901
Email To	david.constant@stantec.com
Phone	507.529.6045 Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information

Report To:	David Constant
Copy To	
Purchase Order No:	
Project Name:	40th Avenue Project - Duluth
Project Number	193702726.200

Section C Invoice Information

Attention:	David Constant
Company Name:	Stantec
Address	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager	Kabor Xiong
Pace Profile #	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End DATE	COLLECTED Composite End TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	PCDD/F (EPA 8290)	Ammonia	Sulfide	MOISTURE	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS1017-CH (15cm)			9-18-14	1345				5	5									X	X	X	X			X		064
2	SS1017-CH (50cm)			9-18-14	1350				5	5									X	X	X	X			X		065
3	SS1011-CH (15cm)			9-18-14	1425				5	5									X	X	X	X			X		066
4	SS1011-CH (50cm)			9-18-14	1430				5	5									X	X	X	X			X		067
5	SS1011-CH (100cm)			9-18-14	1435				5	5									X	X	X	X			X		068
6	SS1009-CH (15cm)			9-18-14	1450				5	5									X	X	X	X			X		069
7	SS1009-CH (50cm)			9-18-14	1455				5	5									X	X	X	X			X		070
8	SS1005-CH (15cm)			9-18-14	1525				5	5									X	X	X	X			X		071
9	SS1005-CH (50cm)			9-18-14	1530				5	5									X	X	X	X			X		072
10	SS1002-CH (15cm)			9-18-14	1605				5	5									X	X	X	X			X		073
11	SS1002-CH (50cm)			9-18-14	1610				5	5									X	X	X	X			X		074
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS (9-22-14)			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-19-14	1515	Pace	9/19/14	~~10:50~~ 18:45	1.3 4.5	Y	Y	Y
* All 17 isomers using high resolution 8290										
WORK ORDER # 10281597										
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/19/2014

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281617

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	[redacted]	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS1037-CH (15cm)			10-1-14	0750				5	5								X	X	X				X		075
2	SS1037-CH (50cm)			10-1-14	0755				5	5								X	X	X				X		076
3	SS1037-CH (100cm)			10-1-14	0800				5	5								X	X	X				X		077
4	SS1035-CH (15cm)			10-1-14	0920				5	5								X	X	X				X		078
5	SS1035-CH (50cm)			10-1-14	0925				5	5								X	X	X				X		079
6	SS1035-CH (100cm)			10-1-14	0930				5	5								X	X	X				X		080
7	DUP-03-CH			10-1-14	—				5	5								X	X	X				X		081
8	EB-04-CH			10-1-14	1030				2	2									X							
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	10-1-14	1335	[illegible] Pace	10/1/14	1335	1.6	Y	N	Y
** All 17 isomers using high resolution 8290							4.1			
WORK ORDER # 10281597										
DIOXIN WORK ORDER # 10281617										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 10/01/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281617

10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☐ Yes ☑ No

Thermom. Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A9132521491 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.7, 0.7 Cooler Temp Corrected (°C): 3.0, 10.0, 0.3 Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 09/16/14 BO

0.0

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ Field Data Required? ☐ Yes ☐ No

Comments/Resolution: _____

Project Manager Review: _____ Date: 09/25/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281617

10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:

Temp Blank? ☐ Yes ☑ No

Thermom. Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A9132521491

Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.5, 5.2

Cooler Temp Corrected (°C): 3.8, 5.5, 3.4, 3.2, 3.3

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C

Correction Factor: 0.3

Date and Initials of Person Examining Contents: 9/17/14 RO

3.1, 2.9, 3.0

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: **Field Data Required?** ☐ Yes ☐ No

Comments/Resolution:

Project Manager Review: ① **Date:** 09/25/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: 10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other:

Temp Blank? ☑ Yes ☐ No

Thermom. Used: ☐ B8A9130516413 ☑ B8A912167504 ☐ B8A9132521491

Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.0

Cooler Temp Corrected (°C): 0.3

Temp should be above freezing to 6°C

Correction Factor: 0.3

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Date and Initials of Person Examining Contents: RAJ 9-18-14

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No	☐ N/A	12. 33-50 cm missing 1 DOFG
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 09/24/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281617

10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☒ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0, 4.2 **Cooler Temp Corrected (°C):** 1.3, 4.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.3 **Date and Initials of Person Examining Contents:** 9-19-14 M

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL & WT	☒ Yes	☐ No	☐ N/A	12. Missing metals container for all soil samples
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☒ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 03, 06, 09, 10, 11 1/1
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 09/24/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281617

10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 1.9, 4.2 Cooler Temp Corrected (°C): 1.3, 4.5 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C Correction Factor: -0.3 Date and Initials of Person Examining Contents: EJR 9/19/14

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 09/25/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: 10281617

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.7, 3.8 **Cooler Temp Corrected (°C):** 1.6, 4.1 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.3 **Date and Initials of Person Examining Contents:** 10-1-14 AA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 10/3/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1022-CH (15cm)			
Lab Sample ID	10281617001			
Filename	U141002A_08			
Injected By	BAL			
Total Amount Extracted	25.1 g	Matrix	Solid	
% Moisture	53.1	Dilution	NA	
Dry Weight Extracted	11.8 g	Collected	09/16/2014	08:30
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	02:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.6	-----	0.16		2,3,7,8-TCDF-13C	2.00	82
Total TCDF	23.0	-----	0.16		2,3,7,8-TCDD-13C	2.00	94
					1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	1.6	-----	0.17		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	13.0	-----	0.17		1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	-----	0.77	0.14	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	3.6	-----	0.11	J	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	70.0	-----	0.12		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	3.3	-----	0.12	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	29.0	-----	0.12		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	9.0	-----	0.33		1,2,3,4,6,7,8-HpCDD-13C	2.00	82
1,2,3,6,7,8-HxCDF	8.2	-----	0.47		OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	3.9	-----	0.39	J			
1,2,3,7,8,9-HxCDF	-----	1.30	0.53	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	260.0	-----	0.43		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	4.1	-----	0.52	J	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	18.0	-----	0.41				
1,2,3,7,8,9-HxCDD	10.0	-----	0.29				
Total HxCDD	180.0	-----	0.41				
1,2,3,4,6,7,8-HpCDF	540.0	-----	0.45		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.4	-----	1.20		Equivalence: 21 ng/Kg		
Total HpCDF	1000.0	-----	0.84		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	270.0	-----	0.17				
Total HpCDD	690.0	-----	0.17				
OCDF	320.0	-----	0.29				
OCDD	2800.0	-----	0.39				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1022-CH (50cm)			
Lab Sample ID	10281617002			
Filename	U141002A_09			
Injected By	BAL			
Total Amount Extracted	26.9 g	Matrix	Solid	
% Moisture	40.9	Dilution	NA	
Dry Weight Extracted	15.9 g	Collected	09/16/2014	08:40
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	03:18

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.23	-----	0.170	J	2,3,7,8-TCDF-13C	2.00	87
Total TCDF	1.00	-----	0.170		2,3,7,8-TCDD-13C	2.00	101
					1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	3.40	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	95
1,2,3,7,8-PeCDF	ND	-----	0.160		1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	0.14	-----	0.100	J	2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	1.70	-----	0.130	J	1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	100
1,2,3,7,8-PeCDD	ND	-----	0.190		1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	2.10	-----	0.190	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	78
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82
1,2,3,4,7,8-HxCDF	0.26	-----	0.130	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	85
1,2,3,6,7,8-HxCDF	0.35	-----	0.120	J	OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	0.23	-----	0.110	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.120		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.70	-----	0.120		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.100		2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	-----	0.39	0.120	IJ			
1,2,3,7,8,9-HxCDD	-----	0.23	0.085	IJ			
Total HxCDD	4.00	-----	0.100				
1,2,3,4,6,7,8-HpCDF	12.00	-----	0.120		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.250		Equivalence: 0.42 ng/Kg		
Total HpCDF	22.00	-----	0.190		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	5.60	-----	0.200				
Total HpCDD	13.00	-----	0.200				
OCDF	6.40	-----	0.310				
OCDD	51.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1022-CH (100cm)		
Lab Sample ID	10281617003		
Filename	U141002A_10		
Injected By	BAL		
Total Amount Extracted	25.5 g	Matrix	Solid
% Moisture	37.7	Dilution	NA
Dry Weight Extracted	15.9 g	Collected	09/16/2014 08:50
ICAL ID	U140925	Received	09/16/2014 18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014 18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014 03:57

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	-----	0.140	J	2,3,7,8-TCDF-13C	2.00	85
Total TCDF	0.96	-----	0.140		2,3,7,8-TCDD-13C	2.00	99
					1,2,3,7,8-PeCDF-13C	2.00	82
2,3,7,8-TCDD	ND	-----	0.170		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	1.20	-----	0.170		1,2,3,7,8-PeCDD-13C	2.00	84
					1,2,3,4,7,8-HxCDF-13C	2.00	92
1,2,3,7,8-PeCDF	ND	-----	0.073		1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	ND	-----	0.067		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	0.30	-----	0.070	J	1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	ND	-----	0.170		1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	0.18	-----	0.170	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	81
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81
1,2,3,4,7,8-HxCDF	-----	0.082	0.081	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	-----	0.110		OCDD-13C	4.00	66
2,3,4,6,7,8-HxCDF	ND	-----	0.084				
1,2,3,7,8,9-HxCDF	ND	-----	0.130		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.86	-----	0.100	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.048		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	0.10	-----	0.056	J			
1,2,3,7,8,9-HxCDD	0.13	-----	0.055	J			
Total HxCDD	1.10	-----	0.053	J			
1,2,3,4,6,7,8-HpCDF	-----	1.400	0.080	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.160		Equivalence: 0.073 ng/Kg		
Total HpCDF	1.10	-----	0.120	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.660	0.140	IJ			
Total HpCDD	1.30	-----	0.140	J			
OCDF	0.98	-----	0.170	J			
OCDD	5.10	-----	0.250	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1023-CH (15cm)			
Lab Sample ID	10281617004			
Filename	U141002A_11			
Injected By	BAL			
Total Amount Extracted	25.1 g	Matrix	Solid	
% Moisture	48.7	Dilution	NA	
Dry Weight Extracted	12.9 g	Collected	09/16/2014	09:30
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	04:37

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	5.3	-----	0.25		2,3,7,8-TCDF-13C	2.00	87
Total TCDF	43.0	-----	0.25		2,3,7,8-TCDD-13C	2.00	100
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	3.2	-----	0.29		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	24.0	-----	0.29		1,2,3,7,8-PeCDD-13C	2.00	76
					1,2,3,4,7,8-HxCDF-13C	2.00	99
1,2,3,7,8-PeCDF	-----	2.3	0.37	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	-----	7.5	0.16	P	2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	110.0	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	77
					1,2,3,4,7,8-HxCDD-13C	2.00	96
1,2,3,7,8-PeCDD	7.9	-----	0.13		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	67.0	-----	0.13		1,2,3,4,6,7,8-HpCDF-13C	2.00	75
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81
1,2,3,4,7,8-HxCDF	20.0	-----	0.38		1,2,3,4,6,7,8-HpCDD-13C	2.00	85
1,2,3,6,7,8-HxCDF	24.0	-----	0.51		OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	6.7	-----	0.41				
1,2,3,7,8,9-HxCDF	2.8	-----	0.45	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	730.0	-----	0.44		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	8.4	-----	0.47		2,3,7,8-TCDD-37Cl4	0.20	94
1,2,3,6,7,8-HxCDD	42.0	-----	0.49				
1,2,3,7,8,9-HxCDD	23.0	-----	0.53				
Total HxCDD	400.0	-----	0.50				
1,2,3,4,6,7,8-HpCDF	1300.0	-----	1.50		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	10.0	-----	1.90		Equivalence: 47 ng/Kg		
Total HpCDF	2600.0	-----	1.70		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	530.0	-----	0.19				
Total HpCDD	1200.0	-----	0.19				
OCDF	690.0	-----	0.42				
OCDD	5600.0	-----	0.40	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1023-CH (50cm)			
Lab Sample ID	10281617005			
Filename	U141002A_12			
Injected By	BAL			
Total Amount Extracted	25.5 g	Matrix	Solid	
% Moisture	40.5	Dilution	NA	
Dry Weight Extracted	15.2 g	Collected	09/16/2014	09:40
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	05:16

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.57	-----	0.200	J	2,3,7,8-TCDF-13C	2.00	90
Total TCDF	7.50	-----	0.200		2,3,7,8-TCDD-13C	2.00	102
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	0.36	-----	0.310	J	2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	4.90	-----	0.310		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	102
1,2,3,7,8-PeCDF	0.41	-----	0.095	J	1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	1.70	-----	0.084	J	2,3,4,6,7,8-HxCDF-13C	2.00	96
Total PeCDF	25.00	-----	0.090		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	109
1,2,3,7,8-PeCDD	1.30	-----	0.110	J	1,2,3,6,7,8-HxCDD-13C	2.00	80
Total PeCDD	8.90	-----	0.110		1,2,3,4,6,7,8-HpCDF-13C	2.00	73
					1,2,3,4,7,8,9-HpCDF-13C	2.00	87
1,2,3,4,7,8-HxCDF	4.50	-----	0.250		1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	5.90	-----	0.240		OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	1.30	-----	0.320	J			
1,2,3,7,8,9-HxCDF	-----	0.88	0.300	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	140.00	-----	0.280		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.92	-----	0.200	J	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	5.10	-----	0.250				
1,2,3,7,8,9-HxCDD	-----	2.20	0.140	IJ			
Total HxCDD	43.00	-----	0.200				
1,2,3,4,6,7,8-HpCDF	280.00	-----	0.220		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	1.80	-----	0.900	J	Equivalence: 8.0 ng/Kg		
Total HpCDF	500.00	-----	0.560		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	45.00	-----	0.350				
Total HpCDD	100.00	-----	0.350				
OCDF	110.00	-----	0.460				
OCDD	360.00	-----	0.500				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1024-CH (15cm)			
Lab Sample ID	10281617006			
Filename	U141002A_13			
Injected By	BAL			
Total Amount Extracted	25.5 g	Matrix	Solid	
% Moisture	52.7	Dilution	NA	
Dry Weight Extracted	12.1 g	Collected	09/16/2014	10:15
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	05:56

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.40	-----	0.240		2,3,7,8-TCDF-13C	2.00	90
Total TCDF	14.00	-----	0.240		2,3,7,8-TCDD-13C	2.00	96
					1,2,3,7,8-PeCDF-13C	2.00	85
2,3,7,8-TCDD	1.10	-----	0.220		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	16.00	-----	0.220		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	96
1,2,3,7,8-PeCDF	0.75	-----	0.280	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	1.90	-----	0.083	J	2,3,4,6,7,8-HxCDF-13C	2.00	91
Total PeCDF	38.00	-----	0.180		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	94
1,2,3,7,8-PeCDD	2.00	-----	0.071	J	1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	24.00	-----	0.071		1,2,3,4,6,7,8-HpCDF-13C	2.00	76
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82
1,2,3,4,7,8-HxCDF	5.20	-----	0.190		1,2,3,4,6,7,8-HpCDD-13C	2.00	85
1,2,3,6,7,8-HxCDF	8.70	-----	0.270		OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	1.90	-----	0.210	J			
1,2,3,7,8,9-HxCDF	1.30	-----	0.210	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	86.00	-----	0.220		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.70	-----	0.210	J	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	12.00	-----	0.350				
1,2,3,7,8,9-HxCDD	5.30	-----	0.250				
Total HxCDD	110.00	-----	0.270				
1,2,3,4,6,7,8-HpCDF	330.00	-----	0.350		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.30	-----	0.450	J	Equivalence: 13 ng/Kg		
Total HpCDF	330.00	-----	0.400		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	160.00	-----	0.180				
Total HpCDD	400.00	-----	0.180				
OCDF	200.00	-----	0.400				
OCDD	1600.00	-----	0.370				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1024-CH (50cm)			
Lab Sample ID	10281617007			
Filename	U141002A_14			
Injected By	BAL			
Total Amount Extracted	25.1 g	Matrix	Solid	
% Moisture	48.0	Dilution	NA	
Dry Weight Extracted	13.1 g	Collected	09/16/2014	10:25
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/25/2014	18:15
Method Blank ID	BLANK-42130	Analyzed	10/02/2014	06:35

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.50	-----	0.26		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	17.00	-----	0.26		2,3,7,8-TCDD-13C	2.00	97
					1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	0.86	-----	0.29		2,3,4,7,8-PeCDF-13C	2.00	77
Total TCDD	11.00	-----	0.29		1,2,3,7,8-PeCDD-13C	2.00	87
					1,2,3,4,7,8-HxCDF-13C	2.00	96
1,2,3,7,8-PeCDF	0.77	-----	0.27	J	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	2.00	-----	0.14	J	2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	35.00	-----	0.21		1,2,3,7,8,9-HxCDF-13C	2.00	77
					1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	1.60	-----	0.43	J	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	20.00	-----	0.43		1,2,3,4,6,7,8-HpCDF-13C	2.00	76
					1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	3.70	-----	0.22	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	7.00	-----	0.26		OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	1.40	-----	0.15	J			
1,2,3,7,8,9-HxCDF	1.40	-----	0.10	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	65.00	-----	0.18		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	1.4	0.49	IJ	2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	9.90	-----	0.15				
1,2,3,7,8,9-HxCDD	4.40	-----	0.15				
Total HxCDD	96.00	-----	0.26				
1,2,3,4,6,7,8-HpCDF	300.00	-----	0.42		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	2.60	-----	0.31	J	Equivalence: 12 ng/Kg		
Total HpCDF	570.00	-----	0.37		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	160.00	-----	0.72				
Total HpCDD	420.00	-----	0.72				
OCDF	180.00	-----	0.28				
OCDD	1700.00	-----	0.51				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1024-CH (100cm)			
Lab Sample ID	10281617008			
Filename	U141001B_05			
Injected By	SMT			
Total Amount Extracted	23.8 g	Matrix	Solid	
% Moisture	50.7	Dilution	NA	
Dry Weight Extracted	11.7 g	Collected	09/16/2014	10:35
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	10:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	8.6	----	0.180		2,3,7,8-TCDF-13C	2.00	90
Total TCDF	47.0	----	0.180		2,3,7,8-TCDD-13C	2.00	103
					1,2,3,7,8-PeCDF-13C	2.00	82
2,3,7,8-TCDD	2.2	----	0.270		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	20.0	----	0.270		1,2,3,7,8-PeCDD-13C	2.00	92
					1,2,3,4,7,8-HxCDF-13C	2.00	101
1,2,3,7,8-PeCDF	1.5	----	0.190	J	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	3.2	----	0.100	J	2,3,4,6,7,8-HxCDF-13C	2.00	96
Total PeCDF	63.0	----	0.140		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	100
1,2,3,7,8-PeCDD	3.8	----	0.210	J	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	38.0	----	0.210		1,2,3,4,6,7,8-HpCDF-13C	2.00	88
					1,2,3,4,7,8,9-HpCDF-13C	2.00	89
1,2,3,4,7,8-HxCDF	6.8	----	0.370		1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	11.0	----	0.370		OCDD-13C	4.00	91
2,3,4,6,7,8-HxCDF	3.2	----	0.320	J			
1,2,3,7,8,9-HxCDF	2.0	----	0.570	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	260.0	----	0.410		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	5.3	----	0.400		2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,6,7,8-HxCDD	19.0	----	0.780				
1,2,3,7,8,9-HxCDD	10.0	----	0.300				
Total HxCDD	200.0	----	0.500				
1,2,3,4,6,7,8-HpCDF	380.0	----	0.072		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.1	----	0.100		Equivalence: 22 ng/Kg		
Total HpCDF	810.0	----	0.088		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	390.0	----	0.110				
Total HpCDD	910.0	----	0.110				
OCDF	270.0	----	0.100				
OCDD	4100.0	----	0.081	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1025-CH (15cm)			
Lab Sample ID	10281617009			
Filename	U141001B_06			
Injected By	SMT			
Total Amount Extracted	23.4 g	Matrix	Solid	
% Moisture	70.6	Dilution	NA	
Dry Weight Extracted	6.88 g	Collected	09/16/2014	11:20
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	11:28

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	12.0	----	1.10		2,3,7,8-TCDF-13C	2.00	82
Total TCDF	98.0	----	1.10		2,3,7,8-TCDD-13C	2.00	94
					1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	2.9	----	1.20		2,3,4,7,8-PeCDF-13C	2.00	75
Total TCDD	13.0	----	1.20		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	93
1,2,3,7,8-PeCDF	----	3.7	0.67	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	7.9	----	0.48		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	120.0	----	0.58		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	105
1,2,3,7,8-PeCDD	3.7	----	0.30	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	34.0	----	0.30		1,2,3,4,6,7,8-HpCDF-13C	2.00	84
					1,2,3,4,7,8,9-HpCDF-13C	2.00	91
1,2,3,4,7,8-HxCDF	----	8.8	0.46	P	1,2,3,4,6,7,8-HpCDD-13C	2.00	98
1,2,3,6,7,8-HxCDF	7.1	----	0.28	J	OCDD-13C	4.00	90
2,3,4,6,7,8-HxCDF	3.9	----	0.29	J			
1,2,3,7,8,9-HxCDF	1.9	----	0.58	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	190.0	----	0.40		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	6.0	----	1.30	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	23.0	----	1.30				
1,2,3,7,8,9-HxCDD	10.0	----	0.22				
Total HxCDD	220.0	----	0.94				
1,2,3,4,6,7,8-HpCDF	190.0	----	0.13		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.9	----	0.72	J	Equivalence: 26 ng/Kg		
Total HpCDF	450.0	----	0.42		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	490.0	----	0.51				
Total HpCDD	1200.0	----	0.51				
OCDF	250.0	----	0.40				
OCDD	5500.0	----	0.38				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1025-CH (50cm)			
Lab Sample ID	10281617010			
Filename	U141001B_07			
Injected By	SMT			
Total Amount Extracted	24.1 g	Matrix	Solid	
% Moisture	68.7	Dilution	NA	
Dry Weight Extracted	7.54 g	Collected	09/16/2014	11:30
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	12:08

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	8.4	-----	0.82		2,3,7,8-TCDF-13C	2.00	87
Total TCDF	110.0	-----	0.82		2,3,7,8-TCDD-13C	2.00	98
					1,2,3,7,8-PeCDF-13C	2.00	82
2,3,7,8-TCDD	4.9	-----	0.68		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	31.0	-----	0.68		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	104
1,2,3,7,8-PeCDF	2.6	-----	0.83	J	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	18.0	-----	0.33		2,3,4,6,7,8-HxCDF-13C	2.00	93
Total PeCDF	240.0	-----	0.58		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	105
1,2,3,7,8-PeCDD	12.0	-----	0.25		1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	83.0	-----	0.25		1,2,3,4,6,7,8-HpCDF-13C	2.00	92
					1,2,3,4,7,8,9-HpCDF-13C	2.00	96
1,2,3,4,7,8-HxCDF	16.0	-----	0.54		1,2,3,4,6,7,8-HpCDD-13C	2.00	103
1,2,3,6,7,8-HxCDF	18.0	-----	0.72		OCDD-13C	4.00	99
2,3,4,6,7,8-HxCDF	8.2	-----	0.40				
1,2,3,7,8,9-HxCDF	5.7	-----	1.00	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	600.0	-----	0.67		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	9.8	-----	2.00		2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	45.0	-----	0.94				
1,2,3,7,8,9-HxCDD	25.0	-----	1.10				
Total HxCDD	400.0	-----	1.30				
1,2,3,4,6,7,8-HpCDF	820.0	-----	0.80		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	8.4	-----	0.85		Equivalence: 53 ng/Kg		
Total HpCDF	1600.0	-----	0.82		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	460.0	-----	0.21				
Total HpCDD	1100.0	-----	0.21				
OCDF	440.0	-----	0.25				
OCDD	4500.0	-----	0.31				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1025-CH (100cm)			
Lab Sample ID	10281617011			
Filename	U141001B_08			
Injected By	SMT			
Total Amount Extracted	23.3 g	Matrix	Solid	
% Moisture	39.2	Dilution	NA	
Dry Weight Extracted	14.2 g	Collected	09/16/2014	11:40
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	12:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.37		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	1.60	-----	0.37		2,3,7,8-TCDD-13C	2.00	105
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	ND	-----	0.34		2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	0.58	-----	0.34	BJ	1,2,3,7,8-PeCDD-13C	2.00	96
					1,2,3,4,7,8-HxCDF-13C	2.00	89
1,2,3,7,8-PeCDF	0.46	-----	0.35	J	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	1.00	-----	0.34	J	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	19.00	-----	0.34		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	94
1,2,3,7,8-PeCDD	0.95	-----	0.27	J	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	3.30	-----	0.27	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
					1,2,3,4,7,8,9-HpCDF-13C	2.00	89
1,2,3,4,7,8-HxCDF	1.60	-----	0.25	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	91
1,2,3,6,7,8-HxCDF	3.20	-----	0.16	J	OCDD-13C	4.00	78
2,3,4,6,7,8-HxCDF	0.90	-----	0.33	J			
1,2,3,7,8,9-HxCDF	0.52	-----	0.35	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	55.00	-----	0.27		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.42	0.38	IJ	2,3,7,8-TCDD-37Cl4	0.20	98
1,2,3,6,7,8-HxCDD	-----	2.50	0.44	IJ			
1,2,3,7,8,9-HxCDD	-----	1.40	0.39	IJ			
Total HxCDD	18.00	-----	0.40				
1,2,3,4,6,7,8-HpCDF	78.00	-----	0.26		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.88	0.36	IJ	Equivalence: 3.6 ng/Kg		
Total HpCDF	140.00	-----	0.31		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	23.00	-----	0.19				
Total HpCDD	49.00	-----	0.19				
OCDF	29.00	-----	0.10				
OCDD	150.00	-----	0.23				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	DUP-01-CH			
Lab Sample ID	10281617012			
Filename	U141001B_09			
Injected By	SMT			
Total Amount Extracted	25.7 g	Matrix	Solid	
% Moisture	41.8	Dilution	NA	
Dry Weight Extracted	15.0 g	Collected	09/16/2014	
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	13:26

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.30	0.26	IJ	2,3,7,8-TCDF-13C	2.00	86
Total TCDF	7.20	-----	0.26		2,3,7,8-TCDD-13C	2.00	99
					1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	0.27		2,3,4,7,8-PeCDF-13C	2.00	77
Total TCDD	5.90	-----	0.27		1,2,3,7,8-PeCDD-13C	2.00	90
					1,2,3,4,7,8-HxCDF-13C	2.00	100
1,2,3,7,8-PeCDF	-----	0.49	0.33	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	2.30	-----	0.28	J	2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	30.00	-----	0.30		1,2,3,7,8,9-HxCDF-13C	2.00	53
					1,2,3,4,7,8-HxCDD-13C	2.00	103
1,2,3,7,8-PeCDD	0.72	-----	0.26	J	1,2,3,6,7,8-HxCDD-13C	2.00	82
Total PeCDD	11.00	-----	0.26		1,2,3,4,6,7,8-HpCDF-13C	2.00	94
					1,2,3,4,7,8,9-HpCDF-13C	2.00	104
1,2,3,4,7,8-HxCDF	5.30	-----	0.34		1,2,3,4,6,7,8-HpCDD-13C	2.00	104
1,2,3,6,7,8-HxCDF	7.70	-----	0.34		OCDD-13C	4.00	98
2,3,4,6,7,8-HxCDF	2.00	-----	0.40	J			
1,2,3,7,8,9-HxCDF	-----	0.93	0.90	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	190.00	-----	0.50		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.30	-----	0.28	J	2,3,7,8-TCDD-37Cl4	0.20	94
1,2,3,6,7,8-HxCDD	6.80	-----	0.28				
1,2,3,7,8,9-HxCDD	3.30	-----	0.17	J			
Total HxCDD	53.00	-----	0.24				
1,2,3,4,6,7,8-HpCDF	350.00	-----	0.52		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.00	-----	0.57	J	Equivalence: 8.8 ng/Kg		
Total HpCDF	620.00	-----	0.54		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	54.00	-----	0.14				
Total HpCDD	120.00	-----	0.14				
OCDF	140.00	-----	0.14				
OCDD	420.00	-----	0.11				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1032-CH (15cm)			
Lab Sample ID	10281617013			
Filename	U141001B_10			
Injected By	SMT			
Total Amount Extracted	23.6 g	Matrix	Solid	
% Moisture	42.5	Dilution	NA	
Dry Weight Extracted	13.6 g	Collected	09/15/2014	15:45
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	14:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.60	-----	0.51		2,3,7,8-TCDF-13C	2.00	88
Total TCDF	14.00	-----	0.51		2,3,7,8-TCDD-13C	2.00	102
					1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	0.61	-----	0.32	J	2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	7.10	-----	0.32		1,2,3,7,8-PeCDD-13C	2.00	96
					1,2,3,4,7,8-HxCDF-13C	2.00	100
1,2,3,7,8-PeCDF	-----	0.37	0.29	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	-----	1.50	0.23	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	92
Total PeCDF	25.00	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	113
1,2,3,7,8-PeCDD	1.20	-----	0.24	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	9.50	-----	0.24		1,2,3,4,6,7,8-HpCDF-13C	2.00	92
					1,2,3,4,7,8,9-HpCDF-13C	2.00	104
1,2,3,4,7,8-HxCDF	2.40	-----	0.27	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	107
1,2,3,6,7,8-HxCDF	3.60	-----	0.17	J	OCDD-13C	4.00	95
2,3,4,6,7,8-HxCDF	1.30	-----	0.14	J			
1,2,3,7,8,9-HxCDF	0.71	-----	0.31	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	81.00	-----	0.22		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	1.20	0.19	IJ	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	-----	5.80	0.31	I			
1,2,3,7,8,9-HxCDD	2.90	-----	0.17	J			
Total HxCDD	54.00	-----	0.22				
1,2,3,4,6,7,8-HpCDF	120.00	-----	0.27		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	1.40	0.45	IJ	Equivalence: 6.8 ng/Kg		
Total HpCDF	220.00	-----	0.36		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	97.00	-----	0.12				
Total HpCDD	270.00	-----	0.12				
OCDF	77.00	-----	0.10				
OCDD	1000.00	-----	0.14				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1032-CH (50cm)			
Lab Sample ID	10281617014			
Filename	U141001B_11			
Injected By	SMT			
Total Amount Extracted	24.8 g	Matrix	Solid	
% Moisture	54.2	Dilution	NA	
Dry Weight Extracted	11.4 g	Collected	09/15/2014	16:10
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	14:45

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.10	-----	0.51		2,3,7,8-TCDF-13C	2.00	91
Total TCDF	35.00	-----	0.51		2,3,7,8-TCDD-13C	2.00	102
					1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	1.50	-----	0.30		2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	6.90	-----	0.30		1,2,3,7,8-PeCDD-13C	2.00	96
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	0.99	-----	0.48	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	3.00	-----	0.30	J	2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	47.00	-----	0.39		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	103
1,2,3,7,8-PeCDD	2.30	-----	0.33	J	1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	12.00	-----	0.33		1,2,3,4,6,7,8-HpCDF-13C	2.00	89
					1,2,3,4,7,8,9-HpCDF-13C	2.00	97
1,2,3,4,7,8-HxCDF	3.90	-----	0.28	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	105
1,2,3,6,7,8-HxCDF	4.60	-----	0.40		OCDD-13C	4.00	96
2,3,4,6,7,8-HxCDF	2.00	-----	0.21	J			
1,2,3,7,8,9-HxCDF	1.40	-----	0.50	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	130.00	-----	0.35		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.40	-----	0.19	J	2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,6,7,8-HxCDD	13.00	-----	0.32				
1,2,3,7,8,9-HxCDD	5.00	-----	0.16				
Total HxCDD	100.00	-----	0.22				
1,2,3,4,6,7,8-HpCDF	180.00	-----	0.16		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.10	-----	0.22	J	Equivalence: 13 ng/Kg		
Total HpCDF	380.00	-----	0.19		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	200.00	-----	0.17				
Total HpCDD	440.00	-----	0.17				
OCDF	170.00	-----	0.31				
OCDD	2400.00	-----	0.32				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1032-CH (100cm)			
Lab Sample ID	10281617015			
Filename	U141001B_12			
Injected By	SMT			
Total Amount Extracted	25.0 g	Matrix	Solid	
% Moisture	55.0	Dilution	NA	
Dry Weight Extracted	11.2 g	Collected	09/15/2014	16:15
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	15:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.2	-----	0.46		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	33.0	-----	0.46		2,3,7,8-TCDD-13C	2.00	100
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	1.2	-----	0.50		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	8.8	-----	0.50		1,2,3,7,8-PeCDD-13C	2.00	90
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	1.6	-----	0.80	J	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	4.8	-----	0.61		2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	82.0	-----	0.70		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	101
1,2,3,7,8-PeCDD	3.9	-----	0.39	J	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	30.0	-----	0.39		1,2,3,4,6,7,8-HpCDF-13C	2.00	88
					1,2,3,4,7,8,9-HpCDF-13C	2.00	96
1,2,3,4,7,8-HxCDF	11.0	-----	0.37		1,2,3,4,6,7,8-HpCDD-13C	2.00	102
1,2,3,6,7,8-HxCDF	18.0	-----	0.38		OCDD-13C	4.00	91
2,3,4,6,7,8-HxCDF	4.2	-----	0.21	J			
1,2,3,7,8,9-HxCDF	2.6	-----	0.30	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	400.0	-----	0.32		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.2	-----	0.68	J	2,3,7,8-TCDD-37Cl4	0.20	93
1,2,3,6,7,8-HxCDD	19.0	-----	0.69				
1,2,3,7,8,9-HxCDD	8.2	-----	0.12				
Total HxCDD	160.0	-----	0.50				
1,2,3,4,6,7,8-HpCDF	690.0	-----	0.14		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.0	-----	0.22		Equivalence: 24 ng/Kg		
Total HpCDF	1300.0	-----	0.18		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	200.0	-----	0.20				
Total HpCDD	440.0	-----	0.20				
OCDF	360.0	-----	0.26				
OCDD	2100.0	-----	0.24				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1030-CH (15cm)			
Lab Sample ID	10281617016			
Filename	U141001B_13			
Injected By	SMT			
Total Amount Extracted	25.4 g	Matrix	Solid	
% Moisture	51.3	Dilution	NA	
Dry Weight Extracted	12.4 g	Collected	09/15/2014	17:00
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	16:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.40	-----	0.69		2,3,7,8-TCDF-13C	2.00	91
Total TCDF	19.00	-----	0.69		2,3,7,8-TCDD-13C	2.00	105
					1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	-----	0.71	0.37	IJ	2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	8.30	-----	0.37		1,2,3,7,8-PeCDD-13C	2.00	94
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	0.79	-----	0.52	J	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	2.10	-----	0.31	J	2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	37.00	-----	0.41		1,2,3,7,8,9-HxCDF-13C	2.00	77
					1,2,3,4,7,8-HxCDD-13C	2.00	97
1,2,3,7,8-PeCDD	2.10	-----	0.46	J	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	17.00	-----	0.46		1,2,3,4,6,7,8-HpCDF-13C	2.00	87
					1,2,3,4,7,8,9-HpCDF-13C	2.00	94
1,2,3,4,7,8-HxCDF	3.40	-----	0.39	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	100
1,2,3,6,7,8-HxCDF	5.30	-----	0.43		OCDD-13C	4.00	92
2,3,4,6,7,8-HxCDF	1.80	-----	0.16	J			
1,2,3,7,8,9-HxCDF	0.86	-----	0.49	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	130.00	-----	0.37		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	2.00	0.30	IJ	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,6,7,8-HxCDD	8.90	-----	0.19				
1,2,3,7,8,9-HxCDD	4.40	-----	0.17				
Total HxCDD	95.00	-----	0.22				
1,2,3,4,6,7,8-HpCDF	180.00	-----	0.13		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	2.90	-----	0.18	J	Equivalence: 11 ng/Kg		
Total HpCDF	350.00	-----	0.16		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	170.00	-----	0.18				
Total HpCDD	540.00	-----	0.18				
OCDF	130.00	-----	0.33				
OCDD	1700.00	-----	0.31				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1030-CH (50cm)			
Lab Sample ID	10281617017			
Filename	U141001B_14			
Injected By	SMT			
Total Amount Extracted	21.2 g	Matrix	Solid	
% Moisture	26.8	Dilution	NA	
Dry Weight Extracted	15.5 g	Collected	09/15/2014	17:10
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	16:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.95	0.26	I	2,3,7,8-TCDF-13C	2.00	84
Total TCDF	7.30	-----	0.26		2,3,7,8-TCDD-13C	2.00	99
					1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	0.41	-----	0.28	J	2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	2.50	-----	0.28		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	0.39	-----	0.22	J	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	0.72	-----	0.17	J	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	12.00	-----	0.20		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	95
1,2,3,7,8-PeCDD	-----	0.63	0.20	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	4.20	-----	0.20		1,2,3,4,6,7,8-HpCDF-13C	2.00	87
					1,2,3,4,7,8,9-HpCDF-13C	2.00	91
1,2,3,4,7,8-HxCDF	1.20	-----	0.18	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	97
1,2,3,6,7,8-HxCDF	1.60	-----	0.17	J	OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	1.10	-----	0.22	J			
1,2,3,7,8,9-HxCDF	0.63	-----	0.19	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	34.00	-----	0.19		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.71	-----	0.14	J	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	2.10	-----	0.21	J			
1,2,3,7,8,9-HxCDD	1.20	-----	0.17	J			
Total HxCDD	21.00	-----	0.18				
1,2,3,4,6,7,8-HpCDF	45.00	-----	0.12		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	1.10	0.18	IJ	Equivalence: 3.3 ng/Kg		
Total HpCDF	88.00	-----	0.15		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	37.00	-----	0.14				
Total HpCDD	83.00	-----	0.14				
OCDF	35.00	-----	0.22				
OCDD	390.00	-----	0.24				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1021-CH (15cm)			
Lab Sample ID	10281617018			
Filename	U141001B_15			
Injected By	SMT			
Total Amount Extracted	23.2 g	Matrix	Solid	
% Moisture	42.5	Dilution	NA	
Dry Weight Extracted	13.3 g	Collected	09/15/2014	17:45
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	17:23

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.70	-----	0.30		2,3,7,8-TCDF-13C	2.00	85
Total TCDF	20.00	-----	0.30		2,3,7,8-TCDD-13C	2.00	99
					1,2,3,7,8-PeCDF-13C	2.00	85
2,3,7,8-TCDD	0.81	-----	0.30		2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	7.90	-----	0.30		1,2,3,7,8-PeCDD-13C	2.00	92
					1,2,3,4,7,8-HxCDF-13C	2.00	98
1,2,3,7,8-PeCDF	-----	0.49	0.36	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	1.60	-----	0.26	J	2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	27.00	-----	0.31		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	104
1,2,3,7,8-PeCDD	-----	1.30	0.31	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	6.80	-----	0.31		1,2,3,4,6,7,8-HpCDF-13C	2.00	83
					1,2,3,4,7,8,9-HpCDF-13C	2.00	92
1,2,3,4,7,8-HxCDF	2.20	-----	0.27	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	95
1,2,3,6,7,8-HxCDF	3.20	-----	0.28	J	OCDD-13C	4.00	88
2,3,4,6,7,8-HxCDF	1.40	-----	0.21	J			
1,2,3,7,8,9-HxCDF	-----	0.46	0.27	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	82.00	-----	0.26		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.50	-----	0.43	J	2,3,7,8-TCDD-37Cl4	0.20	95
1,2,3,6,7,8-HxCDD	7.20	-----	0.46				
1,2,3,7,8,9-HxCDD	3.10	-----	0.26	J			
Total HxCDD	75.00	-----	0.38				
1,2,3,4,6,7,8-HpCDF	120.00	-----	0.18		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	2.70	-----	0.23	J	Equivalence: 7.8 ng/Kg		
Total HpCDF	250.00	-----	0.21		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	140.00	-----	0.15				
Total HpCDD	340.00	-----	0.15				
OCDF	99.00	-----	0.18				
OCDD	1400.00	-----	0.24				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1021-CH (50cm)			
Lab Sample ID	10281617019			
Filename	U141001B_16			
Injected By	SMT			
Total Amount Extracted	27.7 g	Matrix	Solid	
% Moisture	55.3	Dilution	NA	
Dry Weight Extracted	12.4 g	Collected	09/15/2014	17:55
ICAL ID	U140925	Received	09/16/2014	18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	18:03

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.50	-----	0.42		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	30.00	-----	0.42		2,3,7,8-TCDD-13C	2.00	98
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	1.60	-----	0.45		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	11.00	-----	0.45		1,2,3,7,8-PeCDD-13C	2.00	85
					1,2,3,4,7,8-HxCDF-13C	2.00	89
1,2,3,7,8-PeCDF	0.79	-----	0.37	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	2.70	-----	0.32	J	2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	48.00	-----	0.35		1,2,3,7,8,9-HxCDF-13C	2.00	73
					1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	2.80	-----	0.36	J	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	22.00	-----	0.36		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	92
1,2,3,4,7,8-HxCDF	4.80	-----	0.37		1,2,3,4,6,7,8-HpCDD-13C	2.00	98
1,2,3,6,7,8-HxCDF	3.90	-----	0.28	J	OCDD-13C	4.00	87
2,3,4,6,7,8-HxCDF	1.90	-----	0.30	J			
1,2,3,7,8,9-HxCDF	-----	1.3	0.29	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	160.00	-----	0.31		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.20	-----	0.56	J	2,3,7,8-TCDD-37Cl4	0.20	91
1,2,3,6,7,8-HxCDD	13.00	-----	0.17				
1,2,3,7,8,9-HxCDD	6.20	-----	0.17				
Total HxCDD	120.00	-----	0.30				
1,2,3,4,6,7,8-HpCDF	290.00	-----	0.14		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.30	-----	0.22		Equivalence: 15 ng/Kg		
Total HpCDF	570.00	-----	0.18		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	250.00	-----	0.21				
Total HpCDD	560.00	-----	0.21				
OCDF	210.00	-----	0.26				
OCDD	2800.00	-----	0.29				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1021-CH (100cm)		
Lab Sample ID	10281617020		
Filename	U141001B_17		
Injected By	SMT		
Total Amount Extracted	20.6 g	Matrix	Solid
% Moisture	32.2	Dilution	NA
Dry Weight Extracted	14.0 g	Collected	09/15/2014 18:00
ICAL ID	U140925	Received	09/16/2014 18:22
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014 13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014 18:42

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.47	-----	0.28	J	2,3,7,8-TCDF-13C	2.00	89
Total TCDF	3.40	-----	0.28		2,3,7,8-TCDD-13C	2.00	104
					1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	0.32	-----	0.24	J	2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	4.70	-----	0.24		1,2,3,7,8-PeCDD-13C	2.00	95
					1,2,3,4,7,8-HxCDF-13C	2.00	95
1,2,3,7,8-PeCDF	ND	-----	0.21		1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	-----	0.45	0.22	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	8.60	-----	0.21		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	97
1,2,3,7,8-PeCDD	-----	0.50	0.23	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	5.20	-----	0.23		1,2,3,4,6,7,8-HpCDF-13C	2.00	85
					1,2,3,4,7,8,9-HpCDF-13C	2.00	92
1,2,3,4,7,8-HxCDF	0.84	-----	0.29	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	0.92	-----	0.28	J	OCDD-13C	4.00	86
2,3,4,6,7,8-HxCDF	0.96	-----	0.34	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.38		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	29.00	-----	0.32		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.52	-----	0.11	J	2,3,7,8-TCDD-37Cl4	0.20	94
1,2,3,6,7,8-HxCDD	1.90	-----	0.17	J			
1,2,3,7,8,9-HxCDD	0.92	-----	0.19	J			
Total HxCDD	19.00	-----	0.16				
1,2,3,4,6,7,8-HpCDF	47.00	-----	0.23		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.58	0.33	IJ	Equivalence: 2.4 ng/Kg		
Total HpCDF	88.00	-----	0.28		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	24.00	-----	0.52				
Total HpCDD	55.00	-----	0.52				
OCDF	29.00	-----	0.22				
OCDD	220.00	-----	0.20				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1026-CH (15cm)		
Lab Sample ID	10281617021		
Filename	F141002B_09		
Injected By	SMT		
Total Amount Extracted	22.7 g	Matrix	Solid
% Moisture	54.6	Dilution	5
Dry Weight Extracted	10.3 g	Collected	09/16/2014 14:20
ICAL ID	F140918	Received	09/17/2014 18:27
CCal Filename(s)	F141002B_01 & F141002B_18	Extracted	09/27/2014 13:45
Method Blank ID	BLANK-42150	Analyzed	10/02/2014 18:58

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	6.0	----	0.96	D	2,3,7,8-TCDF-13C	2.00	78	D
Total TCDF	52.0	----	0.96	D	2,3,7,8-TCDD-13C	2.00	95	D
					1,2,3,7,8-PeCDF-13C	2.00	63	D
2,3,7,8-TCDD	----	0.80	0.62	IJ	2,3,4,7,8-PeCDF-13C	2.00	59	D
Total TCDD	8.5	----	0.62	D	1,2,3,7,8-PeCDD-13C	2.00	72	D
					1,2,3,4,7,8-HxCDF-13C	2.00	138	RD
1,2,3,7,8-PeCDF	1.7	----	0.72	JD	1,2,3,6,7,8-HxCDF-13C	2.00	141	RD
2,3,4,7,8-PeCDF	3.9	----	0.31	JD	2,3,4,6,7,8-HxCDF-13C	2.00	134	D
Total PeCDF	58.0	----	0.52	D	1,2,3,7,8,9-HxCDF-13C	2.00	123	D
					1,2,3,4,7,8-HxCDD-13C	2.00	148	RD
1,2,3,7,8-PeCDD	2.1	----	0.39	JD	1,2,3,6,7,8-HxCDD-13C	2.00	134	D
Total PeCDD	17.0	----	0.39	JD	1,2,3,4,6,7,8-HpCDF-13C	2.00	107	D
					1,2,3,4,7,8,9-HpCDF-13C	2.00	102	D
1,2,3,4,7,8-HxCDF	4.8	----	0.46	JD	1,2,3,4,6,7,8-HpCDD-13C	2.00	112	D
1,2,3,6,7,8-HxCDF	4.2	----	0.58	JD	OCDD-13C	4.00	85	YD
2,3,4,6,7,8-HxCDF	2.2	----	0.38	JD				
1,2,3,7,8,9-HxCDF	1.5	----	0.80	JD	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	130.0	----	0.56	D	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	3.4	----	0.42	JD	2,3,7,8-TCDD-37Cl4	0.20	98	D
1,2,3,6,7,8-HxCDD	13.0	----	0.33	JD				
1,2,3,7,8,9-HxCDD	2.4	----	0.31	JD				
Total HxCDD	180.0	----	0.35	D				
1,2,3,4,6,7,8-HpCDF	140.0	----	0.64	D	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	4.5	----	0.93	JD	Equivalence: 15 ng/Kg			
Total HpCDF	330.0	----	0.78	D	(Using 1998 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	410.0	----	0.50	D				
Total HpCDD	1400.0	----	0.50	D				
OCDF	190.0	----	2.00	D				
OCDD	4200.0	----	2.50	D				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range
I = Interference present
D = Result obtained from analysis of diluted sample
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1026-CH (50cm)			
Lab Sample ID	10281617022			
Filename	U141001B_19			
Injected By	SMT			
Total Amount Extracted	25.5 g	Matrix	Solid	
% Moisture	42.2	Dilution	NA	
Dry Weight Extracted	14.7 g	Collected	09/16/2014	14:30
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141001B_02 & U141001B_21	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/01/2014	20:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.30	-----	0.64		2,3,7,8-TCDF-13C	2.00	78
Total TCDF	15.00	-----	0.64		2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	ND	-----	0.52		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	-----	0.52		1,2,3,7,8-PeCDD-13C	2.00	85
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	0.67	-----	0.30	J	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	-----	1.20	0.20	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	17.00	-----	0.25		1,2,3,7,8,9-HxCDF-13C	2.00	67
					1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	0.81	-----	0.29	J	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	5.70	-----	0.29		1,2,3,4,6,7,8-HpCDF-13C	2.00	78
					1,2,3,4,7,8,9-HpCDF-13C	2.00	88
1,2,3,4,7,8-HxCDF	1.10	-----	0.17	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	1.40	-----	0.19	J	OCDD-13C	4.00	84
2,3,4,6,7,8-HxCDF	-----	0.63	0.19	IJ			
1,2,3,7,8,9-HxCDF	-----	0.48	0.12	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	28.00	-----	0.17		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.77	0.14	IJ	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	3.30	-----	0.18	J			
1,2,3,7,8,9-HxCDD	1.30	-----	0.14	J			
Total HxCDD	27.00	-----	0.15				
1,2,3,4,6,7,8-HpCDF	35.00	-----	0.14		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.54	-----	0.32	J	Equivalence: 3.3 ng/Kg		
Total HpCDF	67.00	-----	0.23		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	42.00	-----	0.21				
Total HpCDD	110.00	-----	0.21				
OCDF	27.00	-----	0.20				
OCDD	360.00	-----	0.20				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1026-CH (100cm)		
Lab Sample ID	10281617023		
Filename	U141002A_15		
Injected By	BAL		
Total Amount Extracted	16.7 g	Matrix	Solid
% Moisture	37.3	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	09/16/2014 14:40
ICAL ID	U140925	Received	09/17/2014 18:27
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/27/2014 13:45
Method Blank ID	BLANK-42150	Analyzed	10/02/2014 07:15

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.33	-----	0.25	J	2,3,7,8-TCDF-13C	2.00	90
Total TCDF	0.72	-----	0.25	J	2,3,7,8-TCDD-13C	2.00	103
					1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	-----	0.26		2,3,4,7,8-PeCDF-13C	2.00	85
Total TCDD	0.31	-----	0.26	BJ	1,2,3,7,8-PeCDD-13C	2.00	98
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	ND	-----	0.16		1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	ND	-----	0.10		2,3,4,6,7,8-HxCDF-13C	2.00	90
Total PeCDF	0.69	-----	0.13	J	1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	104
1,2,3,7,8-PeCDD	ND	-----	0.19		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	0.56	-----	0.19	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	81
					1,2,3,4,7,8,9-HpCDF-13C	2.00	88
1,2,3,4,7,8-HxCDF	ND	-----	0.21		1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	0.25	-----	0.22	J	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	ND	-----	0.22				
1,2,3,7,8,9-HxCDF	ND	-----	0.28		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.52	-----	0.23	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.20		2,3,7,8-TCDD-37Cl4	0.20	97
1,2,3,6,7,8-HxCDD	ND	-----	0.25				
1,2,3,7,8,9-HxCDD	-----	0.16	0.13	IJ			
Total HxCDD	0.72	-----	0.19	J			
1,2,3,4,6,7,8-HpCDF	-----	1.50	0.19	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.20		Equivalence: 0.11 ng/Kg		
Total HpCDF	1.40	-----	0.19	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	2.20	0.24	IJ			
Total HpCDD	5.80	-----	0.24				
OCDF	1.30	-----	0.28	J			
OCDD	24.00	-----	0.47				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1028-CH (15cm)			
Lab Sample ID	10281617024			
Filename	U141002A_16			
Injected By	BAL			
Total Amount Extracted	22.6 g	Matrix	Solid	
% Moisture	49.7	Dilution	NA	
Dry Weight Extracted	11.4 g	Collected	09/16/2014	15:10
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141001B_21 & U141002A_19	Extracted	09/27/2014	13:45
Method Blank ID	BLANK-42150	Analyzed	10/02/2014	07:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.40	-----	0.330		2,3,7,8-TCDF-13C	2.00	89
Total TCDF	6.00	-----	0.330		2,3,7,8-TCDD-13C	2.00	101
					1,2,3,7,8-PeCDF-13C	2.00	85
2,3,7,8-TCDD	0.40	-----	0.290	J	2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	2.00	-----	0.290		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	90
1,2,3,7,8-PeCDF	0.41	-----	0.230	J	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	1.10	-----	0.150	J	2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	16.00	-----	0.190		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	95
1,2,3,7,8-PeCDD	0.72	-----	0.180	J	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	6.50	-----	0.180		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	86
1,2,3,4,7,8-HxCDF	-----	1.20	0.190	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	1.40	-----	0.110	J	OCDD-13C	4.00	77
2,3,4,6,7,8-HxCDF	0.66	-----	0.110	J			
1,2,3,7,8,9-HxCDF	-----	0.32	0.200	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	34.00	-----	0.150		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.40	-----	0.076	J	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	3.70	-----	0.081	J			
1,2,3,7,8,9-HxCDD	-----	1.50	0.100	IJ			
Total HxCDD	55.00	-----	0.087				
1,2,3,4,6,7,8-HpCDF	38.00	-----	0.220		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.82	0.240	IJ	Equivalence: 4.5 ng/Kg		
Total HpCDF	89.00	-----	0.230		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	120.00	-----	0.110				
Total HpCDD	470.00	-----	0.110				
OCDF	56.00	-----	0.290				
OCDD	1000.00	-----	0.410				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1028-CH (50cm)			
Lab Sample ID	10281617025			
Filename	U141009B_04			
Injected By	SMT			
Total Amount Extracted	15.4 g	Matrix	Solid	
% Moisture	52.4	Dilution	NA	
Dry Weight Extracted	7.33 g	Collected	09/16/2014	15:15
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	16:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	5.40	-----	0.19		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	16.00	-----	0.19		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	0.59	-----	0.24	J	2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	3.90	-----	0.24		1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	88
1,2,3,7,8-PeCDF	3.30	-----	0.13	J	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	2.70	-----	0.12	J	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	33.00	-----	0.12		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	1.30	-----	0.10	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	8.00	-----	0.10		1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	4.50	-----	0.28	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	73
1,2,3,6,7,8-HxCDF	2.30	-----	0.19	J	OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	-----	0.83	0.23	IJ			
1,2,3,7,8,9-HxCDF	-----	0.55	0.35	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	55.00	-----	0.27		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.20	-----	0.34	J	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	5.10	-----	0.47	J			
1,2,3,7,8,9-HxCDD	2.00	-----	0.28	J			
Total HxCDD	55.00	-----	0.36				
1,2,3,4,6,7,8-HpCDF	58.00	-----	0.11		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	1.00	0.15	IJ	Equivalence: 7.1 ng/Kg		
Total HpCDF	120.00	-----	0.13		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	85.00	-----	0.49				
Total HpCDD	300.00	-----	0.49				
OCDF	46.00	-----	0.58				
OCDD	720.00	-----	0.47				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1028-CH (100cm)			
Lab Sample ID	10281617026			
Filename	U141009B_05			
Injected By	SMT			
Total Amount Extracted	15.6 g	Matrix	Solid	
% Moisture	48.3	Dilution	NA	
Dry Weight Extracted	8.07 g	Collected	09/16/2014	15:20
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	17:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.30	-----	0.16		2,3,7,8-TCDF-13C	2.00	69
Total TCDF	10.00	-----	0.16		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	0.47	-----	0.24	J	2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	1.90	-----	0.24		1,2,3,7,8-PeCDD-13C	2.00	68
					1,2,3,4,7,8-HxCDF-13C	2.00	80
1,2,3,7,8-PeCDF	-----	0.51	0.25	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	1.40	-----	0.17	J	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	20.00	-----	0.21		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	0.82	-----	0.14	J	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	7.10	-----	0.14		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	1.60	-----	0.26	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	2.00	-----	0.23	J	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	-----	0.45	0.26	IJ			
1,2,3,7,8,9-HxCDF	-----	0.48	0.32	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	47.00	-----	0.27		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.54	0.39	IJ	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	4.30	-----	0.34	J			
1,2,3,7,8,9-HxCDD	-----	1.60	0.17	IJ			
Total HxCDD	49.00	-----	0.30				
1,2,3,4,6,7,8-HpCDF	56.00	-----	0.25		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.98	-----	0.41	J	Equivalence: 4.8 ng/Kg		
Total HpCDF	120.00	-----	0.33		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	94.00	-----	0.60				
Total HpCDD	420.00	-----	0.60				
OCDF	51.00	-----	0.52				
OCDD	870.00	-----	0.58				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1028-CH (200cm)			
Lab Sample ID	10281617027			
Filename	U141009B_06			
Injected By	SMT			
Total Amount Extracted	15.4 g	Matrix	Solid	
% Moisture	24.9	Dilution	NA	
Dry Weight Extracted	11.6 g	Collected	09/16/2014	15:25
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	17:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.19		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	ND	-----	0.19		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	ND	-----	0.15		2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	ND	-----	0.15		1,2,3,7,8-PeCDD-13C	2.00	69
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	ND	-----	0.15		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	-----	0.18	0.11	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	ND	-----	0.13		1,2,3,7,8,9-HxCDF-13C	2.00	69
					1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	-----	0.14	0.12	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	ND	-----	0.12		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	0.19		1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	ND	-----	0.18		OCDD-13C	4.00	52
2,3,4,6,7,8-HxCDF	0.19	-----	0.15	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.16		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.50	-----	0.17	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.20		2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	0.42	-----	0.21	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.20				
Total HxCDD	3.00	-----	0.21	J			
1,2,3,4,6,7,8-HpCDF	3.40	-----	0.11	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.12		Equivalence: 0.37 ng/Kg		
Total HpCDF	6.60	-----	0.11		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	4.50	-----	0.21				
Total HpCDD	16.00	-----	0.21				
OCDF	1.70	-----	0.45	J			
OCDD	33.00	-----	0.48				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1027-CH (15cm)			
Lab Sample ID	10281617028			
Filename	U141009B_07			
Injected By	SMT			
Total Amount Extracted	15.1 g	Matrix	Solid	
% Moisture	53.0	Dilution	NA	
Dry Weight Extracted	7.10 g	Collected	09/16/2014	16:20
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	18:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.90	-----	0.210		2,3,7,8-TCDF-13C	2.00	64
Total TCDF	17.00	-----	0.210		2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	0.54	-----	0.230	J	2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	3.10	-----	0.230		1,2,3,7,8-PeCDD-13C	2.00	63
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	0.62	-----	0.110	J	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	1.80	-----	0.092	J	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	26.00	-----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	62
					1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	-----	0.51	0.100	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	2.60	-----	0.100	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	1.20	-----	0.260	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	1.30	-----	0.260	J	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	1.10	-----	0.220	J			
1,2,3,7,8,9-HxCDF	0.33	-----	0.240	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	30.00	-----	0.240		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.87	0.310	IJ	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	3.20	-----	0.380	J			
1,2,3,7,8,9-HxCDD	-----	1.40	0.310	IJ			
Total HxCDD	36.00	-----	0.330				
1,2,3,4,6,7,8-HpCDF	24.00	-----	0.270		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.84	0.410	IJ	Equivalence: 4.3 ng/Kg		
Total HpCDF	60.00	-----	0.340		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	75.00	-----	0.470				
Total HpCDD	250.00	-----	0.470				
OCDF	39.00	-----	0.850				
OCDD	790.00	-----	0.720				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1027-CH (50cm)			
Lab Sample ID	10281617029			
Filename	F141027C_15			
Injected By	SMT			
Total Amount Extracted	28.4 g	Matrix	Solid	
% Moisture	59.0	Dilution	NA	
Dry Weight Extracted	11.6 g	Collected	09/16/2014	16:25
ICAL ID	F141016	Received	09/17/2014	18:27
CCal Filename(s)	F141027B_09 & F141027C_18	Extracted	10/22/2014	13:20
Method Blank ID	BLANK-42491	Analyzed	10/28/2014	02:33

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.40	-----	0.093		2,3,7,8-TCDF-13C	2.00	89
Total TCDF	6.90	-----	0.093		2,3,7,8-TCDD-13C	2.00	94
					1,2,3,7,8-PeCDF-13C	2.00	96
2,3,7,8-TCDD	-----	0.26	0.180	IJ	2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	ND	-----	0.180		1,2,3,7,8-PeCDD-13C	2.00	95
					1,2,3,4,7,8-HxCDF-13C	2.00	96
1,2,3,7,8-PeCDF	-----	0.63	0.290	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	93
2,3,4,7,8-PeCDF	-----	1.10	0.096	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	97
Total PeCDF	8.90	-----	0.190		1,2,3,7,8,9-HxCDF-13C	2.00	92
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	0.48	-----	0.110	J	1,2,3,6,7,8-HxCDD-13C	2.00	80
Total PeCDD	2.30	-----	0.110	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	0.81	-----	0.110	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	-----	0.49	0.110	IJ	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	0.37	-----	0.100	J			
1,2,3,7,8,9-HxCDF	-----	0.20	0.150	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	16.00	-----	0.120		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.48	-----	0.220	J	2,3,7,8-TCDD-37Cl4	0.20	100
1,2,3,6,7,8-HxCDD	-----	2.30	0.180	IJ			
1,2,3,7,8,9-HxCDD	1.00	-----	0.280	J			
Total HxCDD	19.00	-----	0.220				
1,2,3,4,6,7,8-HpCDF	22.00	-----	0.160		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.50	0.230	IJ	Equivalence: 2.8 ng/Kg		
Total HpCDF	49.00	-----	0.200		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	53.00	-----	0.260				
Total HpCDD	120.00	-----	0.260				
OCDF	35.00	-----	0.500				
OCDD	600.00	-----	0.570				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1027-CH (100cm)			
Lab Sample ID	10281617030			
Filename	U141009B_08			
Injected By	SMT			
Total Amount Extracted	15.5 g	Matrix	Solid	
% Moisture	57.8	Dilution	NA	
Dry Weight Extracted	6.54 g	Collected	09/16/2014	16:30
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	19:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.79	0.47	IJ	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	6.60	-----	0.47		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	ND	-----	0.34		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	ND	-----	0.34		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	ND	-----	0.39		1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	1.10	-----	0.29	J	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	16.00	-----	0.34		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	-----	0.39	0.24	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	4.50	-----	0.24	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	-----	1.20	0.35	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	ND	-----	0.37		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	0.66	-----	0.36	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.37		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	13.00	-----	0.36		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.44		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	2.70	-----	0.49	J			
1,2,3,7,8,9-HxCDD	1.30	-----	0.40	J			
Total HxCDD	9.40	-----	0.44				
1,2,3,4,6,7,8-HpCDF	24.00	-----	0.25		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.42		Equivalence: 2.0 ng/Kg		
Total HpCDF	39.00	-----	0.33		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	11.00	-----	0.45				
Total HpCDD	29.00	-----	0.45				
OCDF	-----	16.00	1.00	I			
OCDD	90.00	-----	0.65				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1027-CH (200cm)			
Lab Sample ID	10281617031			
Filename	U141009B_09			
Injected By	SMT			
Total Amount Extracted	15.2 g	Matrix	Solid	
% Moisture	57.1	Dilution	NA	
Dry Weight Extracted	6.52 g	Collected	09/16/2014	16:35
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	19:40

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	1.70	0.37	I	2,3,7,8-TCDF-13C	2.00	66
Total TCDF	11.00	-----	0.37		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	0.43	-----	0.33	J	2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	3.00	-----	0.33		1,2,3,7,8-PeCDD-13C	2.00	64
					1,2,3,4,7,8-HxCDF-13C	2.00	76
1,2,3,7,8-PeCDF	0.40	-----	0.30	J	1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	1.50	-----	0.22	J	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	21.00	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	61
					1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	0.78	-----	0.24	J	1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	5.10	-----	0.24	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	57
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	-----	1.20	0.26	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	0.82	-----	0.35	J	OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	1.20	-----	0.25	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.37		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	26.00	-----	0.31		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.60	0.42	IJ	2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	-----	2.60	0.45	IJ			
1,2,3,7,8,9-HxCDD	-----	1.00	0.50	IJ			
Total HxCDD	31.00	-----	0.46				
1,2,3,4,6,7,8-HpCDF	20.00	-----	0.34		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.50	0.40	IJ	Equivalence: 3.8 ng/Kg		
Total HpCDF	49.00	-----	0.37		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	61.00	-----	0.77				
Total HpCDD	260.00	-----	0.77				
OCDF	28.00	-----	0.88				
OCDD	580.00	-----	1.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (15cm)			
Lab Sample ID	10281617032			
Filename	U141009B_10			
Injected By	SMT			
Total Amount Extracted	15.6 g	Matrix	Solid	
% Moisture	26.3	Dilution	NA	
Dry Weight Extracted	11.5 g	Collected	09/17/2014	08:20
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	20:19

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.34	-----	0.19	J	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	3.40	-----	0.19		2,3,7,8-TCDD-13C	2.00	74
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	0.18		2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	ND	-----	0.18		1,2,3,7,8-PeCDD-13C	2.00	63
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.12		1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	0.37	-----	0.10	J	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	4.00	-----	0.11	J	1,2,3,7,8,9-HxCDF-13C	2.00	63
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	-----	0.18	0.13	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	0.72	-----	0.13	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	58
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	ND	-----	0.24		1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	0.49	-----	0.29	J	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	0.30	-----	0.23	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.26		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	7.60	-----	0.25		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.31		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	-----	0.88	0.44	IJ			
1,2,3,7,8,9-HxCDD	-----	0.33	0.26	IJ			
Total HxCDD	2.80	-----	0.34	J			
1,2,3,4,6,7,8-HpCDF	9.20	-----	0.19		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.28		Equivalence: 0.81 ng/Kg		
Total HpCDF	18.00	-----	0.23		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	11.00	-----	0.28				
Total HpCDD	27.00	-----	0.28				
OCDF	9.30	-----	0.56				
OCDD	100.00	-----	0.98				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (50cm)			
Lab Sample ID	10281617033			
Filename	U141009B_11			
Injected By	SMT			
Total Amount Extracted	15.9 g	Matrix	Solid	
% Moisture	20.0	Dilution	NA	
Dry Weight Extracted	12.7 g	Collected	09/17/2014	08:25
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141009B_01 & U141009B_13	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	20:58

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.190		2,3,7,8-TCDF-13C	2.00	74
Total TCDF	1.10	-----	0.190		2,3,7,8-TCDD-13C	2.00	86
					1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	-----	0.160		2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	0.23	-----	0.160	J	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	ND	-----	0.130		1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	0.21	-----	0.110	J	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	3.70	-----	0.120	J	1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	-----	0.21	0.093	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	0.67	-----	0.093	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	0.47	-----	0.200	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	1.10	-----	0.210	J	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	0.51	-----	0.170	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.290		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	13.00	-----	0.220		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.22	0.180	IJ	2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	0.62	-----	0.230	J			
1,2,3,7,8,9-HxCDD	0.37	-----	0.180	J			
Total HxCDD	5.80	-----	0.200				
1,2,3,4,6,7,8-HpCDF	20.00	-----	0.170		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.310		Equivalence: 0.92 ng/Kg		
Total HpCDF	35.00	-----	0.240		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	6.90	-----	0.220				
Total HpCDD	15.00	-----	0.220				
OCDF	9.90	-----	0.690				
OCDD	48.00	-----	0.460				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (100cm)			
Lab Sample ID	10281617034			
Filename	F141008A_11			
Injected By	SMT			
Total Amount Extracted	13.7 g	Matrix	Solid	
% Moisture	22.4	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/17/2014	08:30
ICAL ID	F140918	Received	09/17/2014	18:27
CCal Filename(s)	F141008A_01 & F141008A_18	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	21:34

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.058	-----	0.050	J	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	0.540	-----	0.050	BJ	2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	ND	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	70
					1,2,3,4,7,8-HxCDF-13C	2.00	60
1,2,3,7,8-PeCDF	ND	-----	0.052		1,2,3,6,7,8-HxCDF-13C	2.00	60
2,3,4,7,8-PeCDF	ND	-----	0.041		2,3,4,6,7,8-HxCDF-13C	2.00	60
Total PeCDF	0.088	-----	0.047	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.057		1,2,3,6,7,8-HxCDD-13C	2.00	56
Total PeCDD	ND	-----	0.057		1,2,3,4,6,7,8-HpCDF-13C	2.00	56
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	ND	-----	0.070		1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	-----	0.073	0.065	IJ	OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	ND	-----	0.052				
1,2,3,7,8,9-HxCDF	ND	-----	0.075		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.720	-----	0.065	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.063		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	0.079				
1,2,3,7,8,9-HxCDD	ND	-----	0.073				
Total HxCDD	0.240	-----	0.072	J			
1,2,3,4,6,7,8-HpCDF	1.300	-----	0.067	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.097		Equivalence: 0.032 ng/Kg		
Total HpCDF	1.300	-----	0.082	BJ	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.550	0.081	IJ			
Total HpCDD	0.720	-----	0.081	J			
OCDF	0.660	-----	0.160	J			
OCDD	3.900	-----	0.170	BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (200cm)			
Lab Sample ID	10281617035			
Filename	U141009A_07			
Injected By	SMT			
Total Amount Extracted	15.9 g	Matrix	Solid	
% Moisture	22.6	Dilution	NA	
Dry Weight Extracted	12.3 g	Collected	09/17/2014	08:35
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141008A_23 & U141009A_08	Extracted	10/01/2014	19:20
Method Blank ID	BLANK-42179	Analyzed	10/09/2014	12:32

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.24	0.180	IJ	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	1.20	-----	0.180		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	0.290		2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	ND	-----	0.290		1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	0.22	-----	0.082	J	2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	2.00	-----	0.100	J	1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	0.21	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	ND	-----	0.230		1,2,3,4,6,7,8-HpCDD-13C	2.00	59
1,2,3,6,7,8-HxCDF	0.20	-----	0.190	J	OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	0.24	-----	0.190	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.220		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.60	-----	0.210	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.180		2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	-----	0.34	0.240	IJ			
1,2,3,7,8,9-HxCDD	0.27	-----	0.190	J			
Total HxCDD	2.10	-----	0.200	J			
1,2,3,4,6,7,8-HpCDF	3.90	-----	0.180	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.190		Equivalence: 0.33 ng/Kg		
Total HpCDF	7.30	-----	0.180		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	4.80	-----	0.300				
Total HpCDD	13.00	-----	0.300				
OCDF	-----	4.20	0.570	IJ			
OCDD	46.00	-----	0.440				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1042-CH (15cm)			
Lab Sample ID	10281617036			
Filename	F141008A_12			
Injected By	SMT			
Total Amount Extracted	15.8 g	Matrix	Solid	
% Moisture	31.6	Dilution	NA	
Dry Weight Extracted	10.8 g	Collected	09/17/2014	09:25
ICAL ID	F140918	Received	09/17/2014	18:27
CCal Filename(s)	F141008A_01 & F141008A_18	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	22:17

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.88	-----	0.062	J	2,3,7,8-TCDF-13C	2.00	66
Total TCDF	21.00	-----	0.062		2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	51
2,3,7,8-TCDD	-----	0.16	0.100	IJ	2,3,4,7,8-PeCDF-13C	2.00	50
Total TCDD	0.45	-----	0.100	J	1,2,3,7,8-PeCDD-13C	2.00	57
					1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	-----	0.45	0.074	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	2.20	-----	0.067	J	2,3,4,6,7,8-HxCDF-13C	2.00	57
Total PeCDF	27.00	-----	0.071		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	-----	0.45	0.054	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	54
Total PeCDD	3.60	-----	0.054	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	42
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	1.20	-----	0.098	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	50
1,2,3,6,7,8-HxCDF	1.10	-----	0.063	J	OCDD-13C	4.00	37 R
2,3,4,6,7,8-HxCDF	-----	0.73	0.066	IJ			
1,2,3,7,8,9-HxCDF	0.35	-----	0.065	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	29.00	-----	0.073		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.10	-----	0.130	J	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	2.80	-----	0.100	J			
1,2,3,7,8,9-HxCDD	1.70	-----	0.110	J			
Total HxCDD	30.00	-----	0.110				
1,2,3,4,6,7,8-HpCDF	25.00	-----	0.170		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.83	-----	0.110	BJ	Equivalence: 3.8 ng/Kg		
Total HpCDF	65.00	-----	0.140		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	76.00	-----	0.070				
Total HpCDD	200.00	-----	0.070				
OCDF	49.00	-----	0.190				
OCDD	690.00	-----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1042-CH (50cm)		
Lab Sample ID	10281617037		
Filename	F140930B_17		
Injected By	SMT		
Total Amount Extracted	16.1 g	Matrix	Solid
% Moisture	20.3	Dilution	NA
Dry Weight Extracted	12.8 g	Collected	09/17/2014 09:30
ICAL ID	F140918	Received	09/17/2014 18:27
CCal Filename(s)	F140930B_06 & F140930B_23	Extracted	09/27/2014 13:45
Method Blank ID	BLANK-42150	Analyzed	09/30/2014 20:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.290	-----	0.078	J	2,3,7,8-TCDF-13C	2.00	83
Total TCDF	3.300	-----	0.078		2,3,7,8-TCDD-13C	2.00	92
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	0.097	-----	0.092	J	2,3,4,7,8-PeCDF-13C	2.00	63
Total TCDD	0.097	-----	0.092	BJ	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	ND	-----	0.170		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	0.300	-----	0.110	J	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	5.100	-----	0.140		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	-----	0.160		1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	ND	-----	0.160		1,2,3,4,6,7,8-HpCDF-13C	2.00	78
					1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	-----	0.24	0.150	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	76
1,2,3,6,7,8-HxCDF	0.520	-----	0.120	J	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	0.370	-----	0.100	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.120		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	7.500	-----	0.120		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.200	-----	0.110	J	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,6,7,8-HxCDD	0.590	-----	0.120	J			
1,2,3,7,8,9-HxCDD	0.290	-----	0.100	J			
Total HxCDD	6.300	-----	0.110				
1,2,3,4,6,7,8-HpCDF	9.600	-----	0.096		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.150	-----	0.150	J	Equivalence: 0.70 ng/Kg		
Total HpCDF	18.000	-----	0.120		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	10.000	-----	0.160				
Total HpCDD	31.000	-----	0.160				
OCDF	6.100	-----	0.300	J			
OCDD	77.000	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1010-CH (15cm)			
Lab Sample ID	10281617038			
Filename	F141008A_13			
Injected By	SMT			
Total Amount Extracted	21.5 g	Matrix	Solid	
% Moisture	52.5	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/17/2014	
ICAL ID	F140918	Received	09/17/2014	18:27
CCal Filename(s)	F141008A_01 & F141008A_01	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	23:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.30	-----	0.130		2,3,7,8-TCDF-13C	2.00	69
Total TCDF	19.00	-----	0.130		2,3,7,8-TCDD-13C	2.00	78
					1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	0.83	-----	0.150	J	2,3,4,7,8-PeCDF-13C	2.00	54
Total TCDD	13.00	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	62
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	0.72	-----	0.140	J	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	1.90	-----	0.095	J	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	35.00	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	61
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	2.00	-----	0.059	J	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	20.00	-----	0.059		1,2,3,4,6,7,8-HpCDF-13C	2.00	49
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	4.40	-----	0.120	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	6.50	-----	0.160		OCDD-13C	4.00	43
2,3,4,6,7,8-HxCDF	1.80	-----	0.120	J			
1,2,3,7,8,9-HxCDF	1.10	-----	0.200	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	190.00	-----	0.150		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.00	-----	0.180	J	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	9.90	-----	0.210				
1,2,3,7,8,9-HxCDD	5.00	-----	0.150				
Total HxCDD	110.00	-----	0.180				
1,2,3,4,6,7,8-HpCDF	320.00	-----	0.180		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	2.2	0.140	IJ	Equivalence: 12 ng/Kg		
Total HpCDF	590.00	-----	0.160		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	180.00	-----	0.079				
Total HpCDD	550.00	-----	0.079				
OCDF	150.00	-----	0.170				
OCDD	1900.00	-----	0.260				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1010-CH (50cm)			
Lab Sample ID	10281617039			
Filename	F141008A_14			
Injected By	SMT			
Total Amount Extracted	21.9 g	Matrix	Solid	
% Moisture	53.2	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/17/2014	
ICAL ID	F140918	Received	09/17/2014	18:27
CCal Filename(s)	F141008A_01 & F141008A_18	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	23:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	8.8	-----	0.230		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	48.0	-----	0.230		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	2.6	-----	0.190		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	22.0	-----	0.190		1,2,3,7,8-PeCDD-13C	2.00	69
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	-----	1.7	0.130	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	3.1	-----	0.130	J	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	57.0	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	61
					1,2,3,4,7,8-HxCDD-13C	2.00	86
1,2,3,7,8-PeCDD	3.8	-----	0.072	J	1,2,3,6,7,8-HxCDD-13C	2.00	59
Total PeCDD	30.0	-----	0.072		1,2,3,4,6,7,8-HpCDF-13C	2.00	51
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	6.5	-----	0.240		1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	9.0	-----	0.120		OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	2.5	-----	0.180	J			
1,2,3,7,8,9-HxCDF	1.6	-----	0.200	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	280.0	-----	0.190		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.4	-----	0.180	J	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	24.0	-----	0.130				
1,2,3,7,8,9-HxCDD	9.3	-----	0.120				
Total HxCDD	200.0	-----	0.140				
1,2,3,4,6,7,8-HpCDF	490.0	-----	0.150		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.0	-----	0.084		Equivalence: 24 ng/Kg		
Total HpCDF	960.0	-----	0.120		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	420.0	-----	0.071				
Total HpCDD	890.0	-----	0.071				
OCDF	300.0	-----	0.290				
OCDD	4300.0	-----	0.240				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1010-CH (100cm)		
Lab Sample ID	10281617040		
Filename	F141008B_03		
Injected By	SMT		
Total Amount Extracted	23.6 g	Matrix	Solid
% Moisture	54.9	Dilution	NA
Dry Weight Extracted	10.6 g	Collected	09/17/2014
ICAL ID	F140918	Received	09/17/2014 18:27
CCal Filename(s)	F141008A_18 & F141008B_11	Extracted	10/02/2014 19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014 04:46

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	11.0	----	0.17		2,3,7,8-TCDF-13C	2.00	67
Total TCDF	66.0	----	0.17		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	57
2,3,7,8-TCDD	4.0	----	0.22		2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	25.0	----	0.22		1,2,3,7,8-PeCDD-13C	2.00	60
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	----	2.4	0.14	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	6.7	----	0.16		2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	110.0	----	0.15		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	5.2	----	0.11		1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	48.0	----	0.11		1,2,3,4,6,7,8-HpCDF-13C	2.00	51
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	13.0	----	0.30		1,2,3,4,6,7,8-HpCDD-13C	2.00	54
1,2,3,6,7,8-HxCDF	22.0	----	0.23		OCDD-13C	4.00	34 R
2,3,4,6,7,8-HxCDF	5.1	----	0.26				
1,2,3,7,8,9-HxCDF	3.3	----	0.33	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	690.0	----	0.28		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	5.8	----	0.58		2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	45.0	----	0.21				
1,2,3,7,8,9-HxCDD	18.0	----	0.27				
Total HxCDD	370.0	----	0.35				
1,2,3,4,6,7,8-HpCDF	1200.0	----	0.46		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	10.0	----	0.45		Equivalence: 45 ng/Kg		
Total HpCDF	2200.0	----	0.45		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	760.0	----	0.11				
Total HpCDD	1600.0	----	0.11				
OCDF	710.0	----	0.43				
OCDD	8100.0	----	0.58				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1001-CH (150cm)			
Lab Sample ID	10281617041			
Filename	F141008B_04			
Injected By	SMT			
Total Amount Extracted	21.6 g	Matrix	Solid	
% Moisture	51.1	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/17/2014	11:50
ICAL ID	F140918	Received	09/17/2014	18:27
CCal Filename(s)	F141008A_18 & F141008B_11	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014	05:29

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.70	-----	0.170		2,3,7,8-TCDF-13C	2.00	64
Total TCDF	20.00	-----	0.170		2,3,7,8-TCDD-13C	2.00	73
					1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	1.10	-----	0.160		2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	12.00	-----	0.160		1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	60
1,2,3,7,8-PeCDF	0.82	-----	0.120	J	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	2.20	-----	0.110	J	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	38.00	-----	0.110		1,2,3,7,8,9-HxCDF-13C	2.00	58
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	1.60	-----	0.085	J	1,2,3,6,7,8-HxCDD-13C	2.00	56
Total PeCDD	22.00	-----	0.085		1,2,3,4,6,7,8-HpCDF-13C	2.00	49
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	4.70	-----	0.230	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	7.00	-----	0.170		OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	2.00	-----	0.160	J			
1,2,3,7,8,9-HxCDF	1.00	-----	0.190	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	200.00	-----	0.190		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.00	-----	0.170	J	2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	12.00	-----	0.160				
1,2,3,7,8,9-HxCDD	5.80	-----	0.160				
Total HxCDD	130.00	-----	0.170				
1,2,3,4,6,7,8-HpCDF	340.00	-----	0.190		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.00	-----	0.240	J	Equivalence: 13 ng/Kg		
Total HpCDF	630.00	-----	0.210		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	220.00	-----	0.055				
Total HpCDD	640.00	-----	0.055				
OCDF	170.00	-----	0.160				
OCDD	2200.00	-----	0.210				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1001-CH (50cm)			
Lab Sample ID	10281617042			
Filename	U141008A_10			
Injected By	BAL			
Total Amount Extracted	21.3 g	Matrix	Solid	
% Moisture	50.0	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/17/2014	11:55
ICAL ID	U140925	Received	09/17/2014	18:27
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	19:10

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.40	-----	0.230		2,3,7,8-TCDF-13C	2.00	58
Total TCDF	29.00	-----	0.230		2,3,7,8-TCDD-13C	2.00	67
					1,2,3,7,8-PeCDF-13C	2.00	48
2,3,7,8-TCDD	1.20	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	46
Total TCDD	10.00	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	49
					1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	0.82	-----	0.160	J	1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	2.50	-----	0.100	J	2,3,4,6,7,8-HxCDF-13C	2.00	57
Total PeCDF	49.00	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	49
					1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	2.30	-----	0.081	J	1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	22.00	-----	0.081		1,2,3,4,6,7,8-HpCDF-13C	2.00	48
					1,2,3,4,7,8,9-HpCDF-13C	2.00	52
1,2,3,4,7,8-HxCDF	5.60	-----	0.210		1,2,3,4,6,7,8-HpCDD-13C	2.00	54
1,2,3,6,7,8-HxCDF	7.20	-----	0.190		OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	2.50	-----	0.200	J			
1,2,3,7,8,9-HxCDF	-----	1.0	0.190	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	210.00	-----	0.190		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.30	-----	0.400	J	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	14.00	-----	0.500				
1,2,3,7,8,9-HxCDD	6.10	-----	0.370				
Total HxCDD	140.00	-----	0.420				
1,2,3,4,6,7,8-HpCDF	350.00	-----	0.260		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.40	-----	0.310	J	Equivalence: 16 ng/Kg		
Total HpCDF	700.00	-----	0.280		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	270.00	-----	0.590				
Total HpCDD	760.00	-----	0.590				
OCDF	280.00	-----	0.310				
OCDD	3200.00	-----	0.230				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1033-CH (15cm)			
Lab Sample ID	10281617043			
Filename	U141008A_11			
Injected By	BAL			
Total Amount Extracted	32.5 g	Matrix	Solid	
% Moisture	68.4	Dilution	NA	
Dry Weight Extracted	10.3 g	Collected	09/18/2014	08:40
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	19:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.5	----	0.230		2,3,7,8-TCDF-13C	2.00	72
Total TCDF	51.0	----	0.230		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	----	0.89	0.220	IJ	2,3,4,7,8-PeCDF-13C	2.00	55
Total TCDD	18.0	----	0.220		1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	1.5	----	0.130	J	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	4.6	----	0.096	J	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	81.0	----	0.110		1,2,3,7,8,9-HxCDF-13C	2.00	58
					1,2,3,4,7,8-HxCDD-13C	2.00	87
1,2,3,7,8-PeCDD	3.6	----	0.075	J	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	32.0	----	0.075		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	6.2	----	0.280		1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	9.1	----	0.180		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	3.0	----	0.120	J			
1,2,3,7,8,9-HxCDF	1.6	----	0.290	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	190.0	----	0.220		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.7	----	0.440	J	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	18.0	----	0.460				
1,2,3,7,8,9-HxCDD	8.7	----	0.280				
Total HxCDD	200.0	----	0.390				
1,2,3,4,6,7,8-HpCDF	290.0	----	0.170		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.8	----	0.470	J	Equivalence: 19 ng/Kg		
Total HpCDF	600.0	----	0.320		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	350.0	----	0.160				
Total HpCDD	1200.0	----	0.160				
OCDF	240.0	----	0.320				
OCDD	3700.0	----	0.280				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1033-CH (50cm)			
Lab Sample ID	10281617044			
Filename	U141008A_12			
Injected By	BAL			
Total Amount Extracted	23.3 g	Matrix	Solid	
% Moisture	57.3	Dilution	NA	
Dry Weight Extracted	9.95 g	Collected	09/18/2014	08:45
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	20:28

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	7.3	-----	0.23		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	81.0	-----	0.23		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	53
2,3,7,8-TCDD	1.9	-----	0.28		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	24.0	-----	0.28		1,2,3,7,8-PeCDD-13C	2.00	57
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	2.4	-----	0.17	J	1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	8.4	-----	0.14		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	120.0	-----	0.15		1,2,3,7,8,9-HxCDF-13C	2.00	56
					1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	4.1	-----	0.12	J	1,2,3,6,7,8-HxCDD-13C	2.00	54
Total PeCDD	44.0	-----	0.12		1,2,3,4,6,7,8-HpCDF-13C	2.00	50
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	8.5	-----	0.28		1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	9.8	-----	0.22		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	3.8	-----	0.33	J			
1,2,3,7,8,9-HxCDF	2.7	-----	0.31	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	210.0	-----	0.29		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	4.4	-----	0.26	J	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	25.0	-----	0.59				
1,2,3,7,8,9-HxCDD	10.0	-----	0.17				
Total HxCDD	220.0	-----	0.34				
1,2,3,4,6,7,8-HpCDF	280.0	-----	0.15		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.2	-----	0.23		Equivalence: 24 ng/Kg		
Total HpCDF	630.0	-----	0.19		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	350.0	-----	0.62				
Total HpCDD	840.0	-----	0.62				
OCDF	290.0	-----	0.26				
OCDD	4200.0	-----	0.40				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1033-CH (100cm)		
Lab Sample ID	10281617045		
Filename	U141008A_13		
Injected By	BAL		
Total Amount Extracted	23.8 g	Matrix	Solid
% Moisture	57.0	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	09/18/2014 08:50
ICAL ID	U140925	Received	09/18/2014 18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014 19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014 21:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	5.1	-----	0.29		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	77.0	-----	0.29		2,3,7,8-TCDD-13C	2.00	82
					1,2,3,7,8-PeCDF-13C	2.00	54
2,3,7,8-TCDD	1.6	-----	0.19		2,3,4,7,8-PeCDF-13C	2.00	51
Total TCDD	14.0	-----	0.19		1,2,3,7,8-PeCDD-13C	2.00	56
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	-----	1.3	0.43	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	8.9	-----	0.33		2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	130.0	-----	0.38		1,2,3,7,8,9-HxCDF-13C	2.00	54
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	2.9	-----	0.14	J	1,2,3,6,7,8-HxCDD-13C	2.00	53
Total PeCDD	25.0	-----	0.14		1,2,3,4,6,7,8-HpCDF-13C	2.00	49
					1,2,3,4,7,8,9-HpCDF-13C	2.00	53
1,2,3,4,7,8-HxCDF	4.6	-----	0.30	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	5.0	-----	0.25		OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	2.8	-----	0.23	J			
1,2,3,7,8,9-HxCDF	2.0	-----	0.24	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	150.0	-----	0.25		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.6	-----	0.34	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	16.0	-----	0.23				
1,2,3,7,8,9-HxCDD	6.1	-----	0.34				
Total HxCDD	140.0	-----	0.30				
1,2,3,4,6,7,8-HpCDF	190.0	-----	0.24		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.2	-----	0.31		Equivalence: 20 ng/Kg		
Total HpCDF	460.0	-----	0.28		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	360.0	-----	0.54				
Total HpCDD	1000.0	-----	0.54				
OCDF	280.0	-----	0.42				
OCDD	5100.0	-----	0.35				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1034-CH (15cm)			
Lab Sample ID	10281617046			
Filename	F141017A_08			
Injected By	SMT			
Total Amount Extracted	26.8 g	Matrix	Solid	
% Moisture	71.0	Dilution	NA	
Dry Weight Extracted	7.77 g	Collected	09/18/2014	09:25
ICAL ID	F141016	Received	09/18/2014	18:48
CCal Filename(s)	F141016A_20 & F141017A_17	Extracted	10/07/2014	20:00
Method Blank ID	BLANK-42249	Analyzed	10/17/2014	07:36

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.2	----	0.46		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	27.0	----	0.46		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	1.1	----	0.77	J	2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	6.9	----	0.77		1,2,3,7,8-PeCDD-13C	2.00	69
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	----	4.7	1.00	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	52
2,3,4,7,8-PeCDF	5.2	----	0.81	J	2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	45.0	----	0.92		1,2,3,7,8,9-HxCDF-13C	2.00	56
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	3.7	----	1.00	J	1,2,3,6,7,8-HxCDD-13C	2.00	53
Total PeCDD	22.0	----	1.00		1,2,3,4,6,7,8-HpCDF-13C	2.00	44
					1,2,3,4,7,8,9-HpCDF-13C	2.00	51
1,2,3,4,7,8-HxCDF	7.4	----	0.64		1,2,3,4,6,7,8-HpCDD-13C	2.00	54
1,2,3,6,7,8-HxCDF	10.0	----	0.89		OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	2.8	----	0.81	J			
1,2,3,7,8,9-HxCDF	----	1.5	0.71	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	240.0	----	0.76		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.2	----	0.98	J	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	15.0	----	0.47				
1,2,3,7,8,9-HxCDD	7.8	----	0.64				
Total HxCDD	170.0	----	0.70				
1,2,3,4,6,7,8-HpCDF	360.0	----	1.60		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.2	----	1.50	J	Equivalence: 20 ng/Kg		
Total HpCDF	720.0	----	1.60		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	320.0	----	0.91				
Total HpCDD	1000.0	----	0.91				
OCDF	250.0	----	2.60				
OCDD	3200.0	----	2.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1034-CH (50cm)			
Lab Sample ID	10281617047			
Filename	U141008A_14			
Injected By	BAL			
Total Amount Extracted	23.0 g	Matrix	Solid	
% Moisture	55.5	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/18/2014	09:30
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	21:46

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.5	----	0.11		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	48.0	----	0.11		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	53
2,3,7,8-TCDD	1.6	----	0.19		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	29.0	----	0.19		1,2,3,7,8-PeCDD-13C	2.00	56
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	1.8	----	0.20	J	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	4.6	----	0.18	J	2,3,4,6,7,8-HxCDF-13C	2.00	58
Total PeCDF	77.0	----	0.19		1,2,3,7,8,9-HxCDF-13C	2.00	49
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	4.2	----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	48
Total PeCDD	120.0	----	0.19		1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	6.4	----	0.31		1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	11.0	----	0.41		OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	3.6	----	0.27	J			
1,2,3,7,8,9-HxCDF	2.8	----	0.45	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	130.0	----	0.36		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	19.0	----	0.55		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	30.0	----	0.53				
1,2,3,7,8,9-HxCDD	15.0	----	0.20				
Total HxCDD	830.0	----	0.43				
1,2,3,4,6,7,8-HpCDF	300.0	----	0.37		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	----	4.6	0.42	IJ	Equivalence: 27 ng/Kg		
Total HpCDF	610.0	----	0.40		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	580.0	----	0.19				
Total HpCDD	2300.0	----	0.19				
OCDF	180.0	----	0.44				
OCDD	3700.0	----	0.28				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1034-CH (100cm)			
Lab Sample ID	10281617048			
Filename	U141008A_15			
Injected By	BAL			
Total Amount Extracted	20.5 g	Matrix	Solid	
% Moisture	50.1	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/18/2014	09:35
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	22:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	8.1	-----	0.20		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	77.0	-----	0.20		2,3,7,8-TCDD-13C	2.00	86
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	2.3	-----	0.23		2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	24.0	-----	0.23		1,2,3,7,8-PeCDD-13C	2.00	64
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	2.3	-----	0.19	J	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	8.1	-----	0.33		2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	110.0	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	62
					1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	4.2	-----	0.22	J	1,2,3,6,7,8-HxCDD-13C	2.00	54
Total PeCDD	67.0	-----	0.22		1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	8.2	-----	0.55		1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	14.0	-----	0.26		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	4.3	-----	0.29	J			
1,2,3,7,8,9-HxCDF	2.8	-----	0.48	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	280.0	-----	0.40		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	14.0	-----	0.29		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	34.0	-----	0.31				
1,2,3,7,8,9-HxCDD	15.0	-----	0.30				
Total HxCDD	640.0	-----	0.30				
1,2,3,4,6,7,8-HpCDF	340.0	-----	0.31		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	8.0	-----	0.32		Equivalence: 32 ng/Kg		
Total HpCDF	710.0	-----	0.31		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	750.0	-----	0.25				
Total HpCDD	2700.0	-----	0.25				
OCDF	290.0	-----	0.51				
OCDD	5900.0	-----	0.49				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1031-CH (15cm)			
Lab Sample ID	10281617049			
Filename	U141008A_16			
Injected By	BAL			
Total Amount Extracted	22.7 g	Matrix	Solid	
% Moisture	53.5	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/18/2014	10:05
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/08/2014	23:03

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.10	-----	0.23		2,3,7,8-TCDF-13C	2.00	69
Total TCDF	21.00	-----	0.23		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	59
2,3,7,8-TCDD	0.87	-----	0.21	J	2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	14.00	-----	0.21		1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	77
1,2,3,7,8-PeCDF	0.80	-----	0.28	J	1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	2.40	-----	0.26	J	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	44.00	-----	0.27		1,2,3,7,8,9-HxCDF-13C	2.00	56
					1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	7.40	-----	0.15		1,2,3,6,7,8-HxCDD-13C	2.00	53
Total PeCDD	60.00	-----	0.15		1,2,3,4,6,7,8-HpCDF-13C	2.00	54
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	4.00	-----	0.32	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	7.50	-----	0.45		OCDD-13C	4.00	49
2,3,4,6,7,8-HxCDF	1.70	-----	0.38	J			
1,2,3,7,8,9-HxCDF	1.50	-----	0.23	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	190.00	-----	0.35		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	5.10	-----	0.53		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	43.00	-----	0.48				
1,2,3,7,8,9-HxCDD	20.00	-----	0.40				
Total HxCDD	440.00	-----	0.47				
1,2,3,4,6,7,8-HpCDF	240.00	-----	0.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.70	-----	0.27	J	Equivalence: 24 ng/Kg		
Total HpCDF	470.00	-----	0.23		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	280.00	-----	0.44				
Total HpCDD	980.00	-----	0.44				
OCDF	130.00	-----	0.33				
OCDD	2200.00	-----	0.45				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1031-CH (50cm)			
Lab Sample ID	10281617050-R			
Filename	F141017A_07			
Injected By	SMT			
Total Amount Extracted	16.6 g	Matrix	Solid	
% Moisture	39.0	Dilution	NA	
Dry Weight Extracted	10.1 g	Collected	09/18/2014	10:10
ICAL ID	F141016	Received	09/18/2014	18:48
CCal Filename(s)	F141016A_20 & F141017A_17	Extracted	10/09/2014	20:55
Method Blank ID	BLANK-42292	Analyzed	10/17/2014	06:53

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.20	-----	0.13		2,3,7,8-TCDF-13C	2.00	65
Total TCDF	7.50	-----	0.13		2,3,7,8-TCDD-13C	2.00	72
					1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	0.50	-----	0.23	J	2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	2.30	-----	0.23		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	-----	0.95	0.16	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	1.30	-----	0.17	J	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	11.00	-----	0.17		1,2,3,7,8,9-HxCDF-13C	2.00	62
					1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	1.00	-----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	53
Total PeCDD	8.80	-----	0.19		1,2,3,4,6,7,8-HpCDF-13C	2.00	48
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	2.10	-----	0.44	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	-----	2.50	0.38	IJ	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	-----	0.48	0.33	IJ			
1,2,3,7,8,9-HxCDF	-----	0.53	0.32	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	69.00	-----	0.37		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.70	0.37	IJ	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	-----	4.10	0.42	IJ			
1,2,3,7,8,9-HxCDD	2.00	-----	0.44	J			
Total HxCDD	42.00	-----	0.41				
1,2,3,4,6,7,8-HpCDF	98.00	-----	0.52		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	1.60	0.69	IJ	Equivalence: 5.7 ng/Kg		
Total HpCDF	210.00	-----	0.60		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	100.00	-----	0.76				
Total HpCDD	310.00	-----	0.76				
OCDF	84.00	-----	1.10				
OCDD	1200.00	-----	1.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1031-CH (100cm)			
Lab Sample ID	10281617051			
Filename	U141008A_18			
Injected By	BAL			
Total Amount Extracted	18.5 g	Matrix	Solid	
% Moisture	44.9	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/18/2014	10:15
ICAL ID	U140925	Received	09/18/2014	18:48
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014	00:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.2	-----	0.160		2,3,7,8-TCDF-13C	2.00	82
Total TCDF	35.0	-----	0.160		2,3,7,8-TCDD-13C	2.00	94
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	1.1	-----	0.180		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	15.0	-----	0.180		1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	1.3	-----	0.150	J	1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	3.2	-----	0.093	J	2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	58.0	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	1.9	-----	0.130	J	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	24.0	-----	0.130		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	4.8	-----	0.220	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	69
1,2,3,6,7,8-HxCDF	9.0	-----	0.210		OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	2.1	-----	0.170	J			
1,2,3,7,8,9-HxCDF	-----	1.3	0.510	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	200.0	-----	0.280		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.1	-----	0.190	J	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	14.0	-----	0.260				
1,2,3,7,8,9-HxCDD	6.4	-----	0.200				
Total HxCDD	120.0	-----	0.220				
1,2,3,4,6,7,8-HpCDF	260.0	-----	0.370		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.7	-----	0.290	J	Equivalence: 14 ng/Kg		
Total HpCDF	530.0	-----	0.330		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	190.0	-----	0.530				
Total HpCDD	450.0	-----	0.530				
OCDF	190.0	-----	0.310				
OCDD	2000.0	-----	0.360				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1041-CH (15cm)			
Lab Sample ID	10281617052			
Filename	U141008A_19			
Injected By	BAL			
Total Amount Extracted	13.9 g	Matrix	Solid	
% Moisture	25.9	Dilution	NA	
Dry Weight Extracted	10.3 g	Collected	09/18/2014	08:25
ICAL ID	U140925	Received	09/19/2014	18:45
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014	01:00

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	-----	0.130	J	2,3,7,8-TCDF-13C	2.00	78
Total TCDF	1.10	-----	0.130	B	2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	ND	-----	0.130		2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	0.32	-----	0.130	J	1,2,3,7,8-PeCDD-13C	2.00	75
					1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	ND	-----	0.150		1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	-----	0.11	0.089	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	1.00	-----	0.120	J	1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	-----	0.099		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	0.22	-----	0.099	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	-----	0.220		1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	0.32	-----	0.210	J	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	-----	0.20	0.200	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.240		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	4.70	-----	0.220	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.180		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	-----	0.29	0.160	IJ			
1,2,3,7,8,9-HxCDD	-----	0.28	0.200	IJ			
Total HxCDD	2.70	-----	0.180	J			
1,2,3,4,6,7,8-HpCDF	6.80	-----	0.180		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.210		Equivalence: 0.30 ng/Kg		
Total HpCDF	12.00	-----	0.200		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	3.80	-----	0.130	J			
Total HpCDD	11.00	-----	0.130				
OCDF	3.80	-----	0.210	J			
OCDD	34.00	-----	0.350				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1041-CH (50cm)		
Lab Sample ID	10281617053		
Filename	U141008A_20		
Injected By	BAL		
Total Amount Extracted	13.0 g	Matrix	Solid
% Moisture	19.0	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	09/18/2014 08:30
ICAL ID	U140925	Received	09/19/2014 18:45
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014 19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014 01:39

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.38	-----	0.110	J	2,3,7,8-TCDF-13C	2.00	80
Total TCDF	2.10	-----	0.110		2,3,7,8-TCDD-13C	2.00	91
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	ND	-----	0.130		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	ND	-----	0.130		1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	90
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	-----	0.21	0.074	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	2.50	-----	0.088	J	1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	92
1,2,3,7,8-PeCDD	ND	-----	0.120		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	1.10	-----	0.120	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	0.28	-----	0.210	BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	-----	0.49	0.160	IJ	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	0.35	-----	0.110	J			
1,2,3,7,8,9-HxCDF	0.25	-----	0.200	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	8.30	-----	0.170		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.260		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	0.72	-----	0.330	J			
1,2,3,7,8,9-HxCDD	-----	0.30	0.270	IJ			
Total HxCDD	6.20	-----	0.290				
1,2,3,4,6,7,8-HpCDF	13.00	-----	0.170		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.27	0.230	IJ	Equivalence: 0.64 ng/Kg		
Total HpCDF	25.00	-----	0.200		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	12.00	-----	0.260				
Total HpCDD	26.00	-----	0.260				
OCDF	9.20	-----	0.380	J			
OCDD	110.00	-----	0.360				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1004-CH (15cm)			
Lab Sample ID	10281617054			
Filename	U141008A_21			
Injected By	BAL			
Total Amount Extracted	38.2 g	Matrix	Solid	
% Moisture	73.4	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/19/2014	10:45
ICAL ID	U140925	Received	09/19/2014	18:45
CCal Filename(s)	U141008A_05 & U141008A_23	Extracted	10/02/2014	19:30
Method Blank ID	BLANK-42200	Analyzed	10/09/2014	02:18

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.15	0.11	IJ	2,3,7,8-TCDF-13C	2.00	52
Total TCDF	2.70	-----	0.11		2,3,7,8-TCDD-13C	2.00	56
					1,2,3,7,8-PeCDF-13C	2.00	49
2,3,7,8-TCDD	ND	-----	0.31		2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	5.40	-----	0.31		1,2,3,7,8-PeCDD-13C	2.00	57
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	0.16		1,2,3,6,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	-----	0.13	0.12	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	0.75	-----	0.14	J	1,2,3,7,8,9-HxCDF-13C	2.00	42
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	-----	0.32	0.22	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	53
Total PeCDD	5.10	-----	0.22		1,2,3,4,6,7,8-HpCDF-13C	2.00	53
					1,2,3,4,7,8,9-HpCDF-13C	2.00	53
1,2,3,4,7,8-HxCDF	-----	0.23	0.16	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	-----	0.30	0.14	IJ	OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	ND	-----	0.18				
1,2,3,7,8,9-HxCDF	ND	-----	0.11		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	5.10	-----	0.15		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.27		2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	-----	0.47	0.28	IJ			
1,2,3,7,8,9-HxCDD	0.45	-----	0.17	J			
Total HxCDD	6.70	-----	0.24				
1,2,3,4,6,7,8-HpCDF	8.50	-----	0.29		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.54		Equivalence: 0.73 ng/Kg		
Total HpCDF	16.00	-----	0.42		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	8.80	-----	0.57				
Total HpCDD	24.00	-----	0.57				
OCDF	-----	4.30	0.37	IJ			
OCDD	66.00	-----	0.61				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1004-CH (50cm)			
Lab Sample ID	10281617055			
Filename	F141010A_03			
Injected By	CVS			
Total Amount Extracted	43.7 g	Matrix	Solid	
% Moisture	76.7	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/19/2014	10:50
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	10:12

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.099		2,3,7,8-TCDF-13C	2.00	51
Total TCDF	1.40	-----	0.099	B	2,3,7,8-TCDD-13C	2.00	49
					1,2,3,7,8-PeCDF-13C	2.00	41
2,3,7,8-TCDD	ND	-----	0.290		2,3,4,7,8-PeCDF-13C	2.00	43
Total TCDD	0.67	-----	0.290	J	1,2,3,7,8-PeCDD-13C	2.00	42
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	0.230		1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	ND	-----	0.094		2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	-----	0.160		1,2,3,7,8,9-HxCDF-13C	2.00	42
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	0.180		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	2.00	-----	0.180	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	45
					1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	0.088		1,2,3,4,6,7,8-HpCDD-13C	2.00	57
1,2,3,6,7,8-HxCDF	ND	-----	0.069		OCDD-13C	4.00	44
2,3,4,6,7,8-HxCDF	ND	-----	0.078				
1,2,3,7,8,9-HxCDF	0.16	-----	0.160	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.28	-----	0.099	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.110		2,3,7,8-TCDD-37Cl4	0.20	45
1,2,3,6,7,8-HxCDD	ND	-----	0.130				
1,2,3,7,8,9-HxCDD	ND	-----	0.093				
Total HxCDD	1.10	-----	0.110	J			
1,2,3,4,6,7,8-HpCDF	-----	1.2	0.230	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.250		Equivalence: 0.040 ng/Kg		
Total HpCDF	1.40	-----	0.240	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1.10	-----	0.130	J			
Total HpCDD	2.80	-----	0.130	J			
OCDF	0.90	-----	0.370	J			
OCDD	-----	6.5	0.490	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1012-CH (15cm)			
Lab Sample ID	10281617056			
Filename	F141010A_04			
Injected By	CVS			
Total Amount Extracted	21.8 g	Matrix	Solid	
% Moisture	51.9	Dilution	NA	
Dry Weight Extracted	10.5 g	Collected	09/19/2014	11:35
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	10:55

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.078		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	0.84	-----	0.078	BJ	2,3,7,8-TCDD-13C	2.00	78
					1,2,3,7,8-PeCDF-13C	2.00	59
2,3,7,8-TCDD	ND	-----	0.120		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	3.60	-----	0.120		1,2,3,7,8-PeCDD-13C	2.00	52
					1,2,3,4,7,8-HxCDF-13C	2.00	80
1,2,3,7,8-PeCDF	ND	-----	0.070		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	-----	0.061	0.060	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	0.49	-----	0.065	J	1,2,3,7,8,9-HxCDF-13C	2.00	63
					1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	-----	0.140	0.100	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	3.30	-----	0.100	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	62
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	ND	-----	0.130		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	0.13	-----	0.130	J	OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	ND	-----	0.120				
1,2,3,7,8,9-HxCDF	ND	-----	0.150		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.82	-----	0.140	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.180		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	ND	-----	0.170				
1,2,3,7,8,9-HxCDD	ND	-----	0.130				
Total HxCDD	1.40	-----	0.160	J			
1,2,3,4,6,7,8-HpCDF	2.40	-----	0.280	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.260		Equivalence: 0.23 ng/Kg		
Total HpCDF	4.40	-----	0.270	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1.80	-----	0.200	J			
Total HpCDD	4.60	-----	0.200	J			
OCDF	-----	1.200	0.500	IJ			
OCDD	18.00	-----	0.870				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1012-CH (50cm)			
Lab Sample ID	10281617057			
Filename	F141010A_05			
Injected By	CVS			
Total Amount Extracted	24.5 g	Matrix	Solid	
% Moisture	58.5	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/19/2014	11:40
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	11:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	0.080		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	0.43	----	0.080	BJ	2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	----	0.210		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	2.60	----	0.210		1,2,3,7,8-PeCDD-13C	2.00	55
					1,2,3,4,7,8-HxCDF-13C	2.00	60
1,2,3,7,8-PeCDF	ND	----	0.082		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	ND	----	0.069		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	----	0.075		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	ND	----	0.170		1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	2.70	----	0.170	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	54
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	ND	----	0.200		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	----	0.110		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	ND	----	0.130				
1,2,3,7,8,9-HxCDF	ND	----	0.150		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	0.150		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.180		2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	ND	----	0.140				
1,2,3,7,8,9-HxCDD	ND	----	0.120				
Total HxCDD	0.45	----	0.150	J			
1,2,3,4,6,7,8-HpCDF	----	0.42	0.260	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	0.270		Equivalence: 0.0088 ng/Kg		
Total HpCDF	ND	----	0.270		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	0.42	----	0.250	J			
Total HpCDD	0.42	----	0.250	J			
OCDF	ND	----	0.550				
OCDD	3.60	----	1.000	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1017-CH (15cm)			
Lab Sample ID	10281617064			
Filename	F141010A_06			
Injected By	CVS			
Total Amount Extracted	22.7 g	Matrix	Solid	
% Moisture	53.0	Dilution	NA	
Dry Weight Extracted	10.7 g	Collected	09/18/2014	13:45
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	12:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	6.6	----	0.19		2,3,7,8-TCDF-13C	2.00	79
Total TCDF	47.0	----	0.19		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	1.7	----	0.23		2,3,4,7,8-PeCDF-13C	2.00	51
Total TCDD	17.0	----	0.23		1,2,3,7,8-PeCDD-13C	2.00	55
					1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	----	8.7	0.32	P	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	2.7	----	0.29	J	2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	60.0	----	0.30		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	3.0	----	0.20	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	32.0	----	0.20		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	4.4	----	0.24	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	3.5	----	0.21	J	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	2.4	----	0.21	J			
1,2,3,7,8,9-HxCDF	1.7	----	0.26	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	180.0	----	0.23		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.8	----	0.31	J	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	17.0	----	0.30				
1,2,3,7,8,9-HxCDD	7.0	----	0.31				
Total HxCDD	160.0	----	0.31				
1,2,3,4,6,7,8-HpCDF	240.0	----	0.40		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.8	----	0.51	J	Equivalence: 17 ng/Kg		
Total HpCDF	500.0	----	0.45		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	320.0	----	0.21				
Total HpCDD	820.0	----	0.21				
OCDF	170.0	----	1.10				
OCDD	2900.0	----	0.73				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1017-CH (50cm)			
Lab Sample ID	10281617065			
Filename	F141010A_07			
Injected By	CVS			
Total Amount Extracted	17.3 g	Matrix	Solid	
% Moisture	40.2	Dilution	NA	
Dry Weight Extracted	10.3 g	Collected	09/18/2014	13:50
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	13:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.4	-----	0.29		2,3,7,8-TCDF-13C	2.00	81
Total TCDF	37.0	-----	0.29		2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	1.9	-----	0.36		2,3,4,7,8-PeCDF-13C	2.00	54
Total TCDD	19.0	-----	0.36		1,2,3,7,8-PeCDD-13C	2.00	63
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	-----	44.0	0.18	P	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	-----	7.3	0.26	P	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	110.0	-----	0.22		1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	6.2	-----	0.18		1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	48.0	-----	0.18		1,2,3,4,6,7,8-HpCDF-13C	2.00	62
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	14.0	-----	0.46		1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	19.0	-----	0.50		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	5.8	-----	0.43				
1,2,3,7,8,9-HxCDF	3.0	-----	0.52	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	580.0	-----	0.48		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.2	-----	0.42	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	28.0	-----	0.26				
1,2,3,7,8,9-HxCDD	15.0	-----	0.25				
Total HxCDD	240.0	-----	0.31				
1,2,3,4,6,7,8-HpCDF	1000.0	-----	0.69		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.9	-----	0.75		Equivalence: 37 ng/Kg		
Total HpCDF	1800.0	-----	0.72		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	280.0	-----	0.31				
Total HpCDD	580.0	-----	0.31				
OCDF	400.0	-----	0.80				
OCDD	2000.0	-----	1.30				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1011-CH (15cm)			
Lab Sample ID	10281617066			
Filename	F141010A_08			
Injected By	CVS			
Total Amount Extracted	20.9 g	Matrix	Solid	
% Moisture	49.5	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/18/2014	14:25
ICAL ID	F140918	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	13:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.1	----	0.19		2,3,7,8-TCDF-13C	2.00	80
Total TCDF	25.0	----	0.19		2,3,7,8-TCDD-13C	2.00	92
					1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	1.4	----	0.22		2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	19.0	----	0.22		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	----	30.0	0.16	P	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	7.6	----	0.13		2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	130.0	----	0.15		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	5.3	----	0.13		1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	43.0	----	0.13		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	17.0	----	0.50		1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	25.0	----	0.26		OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	5.5	----	0.30				
1,2,3,7,8,9-HxCDF	4.0	----	0.45	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	640.0	----	0.38		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	----	2.5	0.44	IJ	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	29.0	----	0.36				
1,2,3,7,8,9-HxCDD	14.0	----	0.21				
Total HxCDD	230.0	----	0.34				
1,2,3,4,6,7,8-HpCDF	1300.0	----	0.64		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	8.7	----	0.61		Equivalence: 38 ng/Kg		
Total HpCDF	2200.0	----	0.62		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	280.0	----	0.26				
Total HpCDD	630.0	----	0.26				
OCDF	480.0	----	0.93				
OCDD	2200.0	----	0.93				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1011-CH (50cm)			
Lab Sample ID	10281617067			
Filename	F141010A_09			
Injected By	CVS			
Total Amount Extracted	14.5 g	Matrix	Solid	
% Moisture	23.6	Dilution	NA	
Dry Weight Extracted	11.1 g	Collected	09/18/2014	14:30
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	14:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.140		2,3,7,8-TCDF-13C	2.00	81
Total TCDF	0.83	-----	0.140	BJ	2,3,7,8-TCDD-13C	2.00	96
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	ND	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	0.099		1,2,3,6,7,8-HxCDF-13C	2.00	93
2,3,4,7,8-PeCDF	ND	-----	0.100		2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	ND	-----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	ND	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	80
Total PeCDD	0.15	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	-----	0.160		1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	ND	-----	0.180		OCDD-13C	4.00	63
2,3,4,6,7,8-HxCDF	ND	-----	0.260				
1,2,3,7,8,9-HxCDF	ND	-----	0.230		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	4.20	-----	0.210	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.160		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	0.160				
1,2,3,7,8,9-HxCDD	ND	-----	0.150				
Total HxCDD	0.75	-----	0.150	J			
1,2,3,4,6,7,8-HpCDF	8.20	-----	0.210		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.430		Equivalence: 0.097 ng/Kg		
Total HpCDF	15.00	-----	0.320		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1.40	-----	0.280	J			
Total HpCDD	3.40	-----	0.280	J			
OCDF	3.90	-----	0.450	J			
OCDD	12.00	-----	0.800				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1011-CH (100cm)		
Lab Sample ID	10281617068		
Filename	F141010A_10		
Injected By	CVS		
Total Amount Extracted	13.7 g	Matrix	Solid
% Moisture	23.6	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	09/18/2014 14:35
ICAL ID	F141016	Received	09/19/2014 18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014 19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014 15:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.10		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	0.81	-----	0.10	BJ	2,3,7,8-TCDD-13C	2.00	98
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.11		2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	0.15	-----	0.11	J	1,2,3,7,8-PeCDD-13C	2.00	79
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	-----	0.20	0.11	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	ND	-----	0.11		2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	0.62	-----	0.11	J	1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.12		1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	ND	-----	0.12		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	-----	0.25		1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	-----	0.22		OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	0.22				
1,2,3,7,8,9-HxCDF	ND	-----	0.29		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.90	-----	0.24	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.22		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	0.20				
1,2,3,7,8,9-HxCDD	ND	-----	0.22				
Total HxCDD	0.57	-----	0.21	J			
1,2,3,4,6,7,8-HpCDF	3.00	-----	0.29	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.52		Equivalence: 0.056 ng/Kg		
Total HpCDF	6.00	-----	0.41	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1.30	-----	0.38	J			
Total HpCDD	3.30	-----	0.38	J			
OCDF	2.50	-----	0.53	J			
OCDD	14.00	-----	1.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1009-CH (15cm)			
Lab Sample ID	10281617069			
Filename	F141010A_11			
Injected By	CVS			
Total Amount Extracted	17.3 g	Matrix	Solid	
% Moisture	37.8	Dilution	NA	
Dry Weight Extracted	10.8 g	Collected	09/18/2014	14:50
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	15:56

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	1.1	0.12	I	2,3,7,8-TCDF-13C	2.00	84
Total TCDF	15.00	-----	0.12		2,3,7,8-TCDD-13C	2.00	99
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	0.66	-----	0.16	J	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	8.40	-----	0.16		1,2,3,7,8-PeCDD-13C	2.00	78
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	-----	9.2	0.12	P	1,2,3,6,7,8-HxCDF-13C	2.00	89
2,3,4,7,8-PeCDF	4.50	-----	0.11	J	2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	63.00	-----	0.11		1,2,3,7,8,9-HxCDF-13C	2.00	83
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	2.80	-----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	23.00	-----	0.19		1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	80
1,2,3,4,7,8-HxCDF	9.30	-----	0.45		1,2,3,4,6,7,8-HpCDD-13C	2.00	91
1,2,3,6,7,8-HxCDF	13.00	-----	0.26		OCDD-13C	4.00	67
2,3,4,6,7,8-HxCDF	4.20	-----	0.33	J			
1,2,3,7,8,9-HxCDF	1.80	-----	0.36	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	330.00	-----	0.35		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.60	-----	0.32	J	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	14.00	-----	0.30				
1,2,3,7,8,9-HxCDD	7.40	-----	0.22				
Total HxCDD	130.00	-----	0.28				
1,2,3,4,6,7,8-HpCDF	620.00	-----	0.85		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.00	-----	0.40		Equivalence: 19 ng/Kg		
Total HpCDF	1100.00	-----	0.62		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	160.00	-----	0.23				
Total HpCDD	400.00	-----	0.23				
OCDF	270.00	-----	0.70				
OCDD	1600.00	-----	0.62				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1009-CH (50cm)			
Lab Sample ID	10281617070			
Filename	F141010A_12			
Injected By	CVS			
Total Amount Extracted	15.7 g	Matrix	Solid	
% Moisture	34.1	Dilution	NA	
Dry Weight Extracted	10.3 g	Collected	09/18/2014	14:55
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	16:39

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.24	-----	0.16	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	1.80	-----	0.16	B	2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	-----	0.16		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	1.50	-----	0.16		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	76
1,2,3,7,8-PeCDF	-----	0.69	0.18	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	0.31	-----	0.20	J	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	2.50	-----	0.19	J	1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	0.30	-----	0.19	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	2.30	-----	0.19	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	-----	0.38	0.27	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	-----	0.52	0.20	IJ	OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	-----	0.22	0.20	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.27		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	9.70	-----	0.24		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.31		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	0.52	-----	0.34	J			
1,2,3,7,8,9-HxCDD	-----	0.27	0.25	IJ			
Total HxCDD	5.70	-----	0.30				
1,2,3,4,6,7,8-HpCDF	19.00	-----	0.37		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.39		Equivalence: 0.95 ng/Kg		
Total HpCDF	32.00	-----	0.38		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	4.90	-----	0.29				
Total HpCDD	12.00	-----	0.29				
OCDF	8.80	-----	0.78	J			
OCDD	40.00	-----	0.87				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1005-CH (15cm)			
Lab Sample ID	10281617071			
Filename	F141010A_13			
Injected By	CVS			
Total Amount Extracted	22.0 g	Matrix	Solid	
% Moisture	51.7	Dilution	NA	
Dry Weight Extracted	10.6 g	Collected	09/18/2014	15:25
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	17:22

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	6.9	----	0.22		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	46.0	----	0.22		2,3,7,8-TCDD-13C	2.00	100
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	2.0	----	0.26		2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	18.0	----	0.26		1,2,3,7,8-PeCDD-13C	2.00	79
					1,2,3,4,7,8-HxCDF-13C	2.00	88
1,2,3,7,8-PeCDF	----	12	0.18	P	1,2,3,6,7,8-HxCDF-13C	2.00	88
2,3,4,7,8-PeCDF	6.0	----	0.24		2,3,4,6,7,8-HxCDF-13C	2.00	90
Total PeCDF	120.0	----	0.21		1,2,3,7,8,9-HxCDF-13C	2.00	85
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	6.2	----	0.30		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	47.0	----	0.30		1,2,3,4,6,7,8-HpCDF-13C	2.00	78
					1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	16.0	----	0.39		1,2,3,4,6,7,8-HpCDD-13C	2.00	92
1,2,3,6,7,8-HxCDF	9.9	----	0.44		OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	6.0	----	0.44				
1,2,3,7,8,9-HxCDF	3.6	----	0.43	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	490.0	----	0.42		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	6.2	----	0.31		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	33.0	----	0.38				
1,2,3,7,8,9-HxCDD	16.0	----	0.39				
Total HxCDD	310.0	----	0.36				
1,2,3,4,6,7,8-HpCDF	850.0	----	1.10		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	9.2	----	0.69		Equivalence: 35 ng/Kg		
Total HpCDF	1600.0	----	0.92		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	450.0	----	0.26				
Total HpCDD	1100.0	----	0.26				
OCDF	510.0	----	0.88				
OCDD	5200.0	----	0.84				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1005-CH (50cm)			
Lab Sample ID	10281617072			
Filename	F141010A_14			
Injected By	CVS			
Total Amount Extracted	24.8 g	Matrix	Solid	
% Moisture	52.7	Dilution	NA	
Dry Weight Extracted	11.7 g	Collected	09/18/2014	15:30
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	18:05

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.21		2,3,7,8-TCDF-13C	2.00	80
Total TCDF	0.85	-----	0.21	B	2,3,7,8-TCDD-13C	2.00	92
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	0.32		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	5.40	-----	0.32		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	-----	0.48	0.20	PJ	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	ND	-----	0.18		2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	ND	-----	0.19		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	0.55	-----	0.35	J	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	1.20	-----	0.35	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	ND	-----	0.29		1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	ND	-----	0.24		OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	-----	0.24				
1,2,3,7,8,9-HxCDF	ND	-----	0.21		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3.10	-----	0.25	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.39		2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	-----	0.47	0.38	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.32				
Total HxCDD	6.10	-----	0.36				
1,2,3,4,6,7,8-HpCDF	15.00	-----	0.49		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.49		Equivalence: 0.82 ng/Kg		
Total HpCDF	25.00	-----	0.49		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	4.60	-----	0.31				
Total HpCDD	11.00	-----	0.31				
OCDF	8.30	-----	1.10	J			
OCDD	44.00	-----	0.78				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1002-CH (15cm)			
Lab Sample ID	10281617073			
Filename	F141010A_15			
Injected By	CVS			
Total Amount Extracted	28.4 g	Matrix	Solid	
% Moisture	64.1	Dilution	NA	
Dry Weight Extracted	10.2 g	Collected	09/18/2014	16:05
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141010A_01 & F141010A_18	Extracted	10/03/2014	19:30
Method Blank ID	BLANK-42210	Analyzed	10/10/2014	18:48

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.6	----	0.34		2,3,7,8-TCDF-13C	2.00	80
Total TCDF	17.0	----	0.34		2,3,7,8-TCDD-13C	2.00	94
					1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	1.2	----	0.38		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	20.0	----	0.38		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	----	16.0	0.24	P	1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	4.6	----	0.27	J	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	58.0	----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	3.4	----	0.22	J	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	36.0	----	0.22		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	5.1	----	0.65		1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	8.5	----	0.48		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	2.6	----	0.56	J			
1,2,3,7,8,9-HxCDF	2.4	----	0.83	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	260.0	----	0.63		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	3.8	----	0.51	J	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	16.0	----	0.38				
1,2,3,7,8,9-HxCDD	9.4	----	0.46				
Total HxCDD	200.0	----	0.45				
1,2,3,4,6,7,8-HpCDF	420.0	----	0.53		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	----	3.8	0.48	IJ	Equivalence: 21 ng/Kg		
Total HpCDF	810.0	----	0.51		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	310.0	----	0.38				
Total HpCDD	990.0	----	0.38				
OCDF	280.0	----	0.84				
OCDD	3300.0	----	1.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1002-CH (50cm)			
Lab Sample ID	10281617074			
Filename	F141017A_09			
Injected By	SMT			
Total Amount Extracted	25.1 g	Matrix	Solid	
% Moisture	60.3	Dilution	NA	
Dry Weight Extracted	9.96 g	Collected	09/18/2014	16:10
ICAL ID	F141016	Received	09/19/2014	18:45
CCal Filename(s)	F141016A_20 & F141017A_17	Extracted	10/07/2014	20:00
Method Blank ID	BLANK-42249	Analyzed	10/17/2014	08:20

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.6	----	0.29		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	25.0	----	0.29		2,3,7,8-TCDD-13C	2.00	82
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	1.2	----	0.36		2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	7.5	----	0.36		1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	----	5.3	0.34	P	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	----	3.4	0.28	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	32.0	----	0.31		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	3.3	----	0.32	J	1,2,3,6,7,8-HxCDD-13C	2.00	59
Total PeCDD	28.0	----	0.32		1,2,3,4,6,7,8-HpCDF-13C	2.00	56
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	5.9	----	0.67		1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	7.4	----	0.65		OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	1.8	----	0.63	J			
1,2,3,7,8,9-HxCDF	----	1.2	0.46	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	200.0	----	0.60		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	----	2.2	0.48	IJ	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	14.0	----	0.29				
1,2,3,7,8,9-HxCDD	7.0	----	0.48				
Total HxCDD	150.0	----	0.42				
1,2,3,4,6,7,8-HpCDF	280.0	----	1.00		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	4.6	----	1.30	J	Equivalence: 17 ng/Kg		
Total HpCDF	570.0	----	1.20		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	300.0	----	0.44				
Total HpCDD	900.0	----	0.44				
OCDF	210.0	----	1.70				
OCDD	3000.0	----	1.70				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1037-CH (15cm)		
Lab Sample ID	10281617075		
Filename	U141017C_15		
Injected By	BAL		
Total Amount Extracted	13.6 g	Matrix	Solid
% Moisture	9.1	Dilution	NA
Dry Weight Extracted	12.4 g	Collected	10/01/2014 07:50
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/18/2014 01:00

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.21		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.21		2,3,7,8-TCDD-13C	2.00	88
					1,2,3,7,8-PeCDF-13C	2.00	57
2,3,7,8-TCDD	ND	-----	0.21		2,3,4,7,8-PeCDF-13C	2.00	50
Total TCDD	0.29	-----	0.21	BJ	1,2,3,7,8-PeCDD-13C	2.00	62
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	-----	0.19		1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	0.38	-----	0.14	J	2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	3.30	-----	0.17	J	1,2,3,7,8,9-HxCDF-13C	2.00	56
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	0.16		1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	0.20	-----	0.16	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	51
1,2,3,4,7,8-HxCDF	ND	-----	0.62		1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	-----	0.51		OCDD-13C	4.00	36 R
2,3,4,6,7,8-HxCDF	ND	-----	0.57				
1,2,3,7,8,9-HxCDF	ND	-----	0.66		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.50	-----	0.59	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.44		2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	-----	1.0	0.62	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.63				
Total HxCDD	4.80	-----	0.56				
1,2,3,4,6,7,8-HpCDF	5.60	-----	0.97		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.20		Equivalence: 0.59 ng/Kg		
Total HpCDF	15.00	-----	1.10		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	21.00	-----	0.55				
Total HpCDD	46.00	-----	0.55				
OCDF	15.00	-----	1.40				
OCDD	260.00	-----	2.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1037-CH (50cm)		
Lab Sample ID	10281617076		
Filename	U141017C_09		
Injected By	BAL		
Total Amount Extracted	13.5 g	Matrix	Solid
% Moisture	9.8	Dilution	NA
Dry Weight Extracted	12.2 g	Collected	10/01/2014 07:55
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/17/2014 21:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.20		2,3,7,8-TCDF-13C	2.00	66
Total TCDF	ND	-----	0.20		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	0.25		2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	ND	-----	0.25		1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.27		1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	ND	-----	0.23		2,3,4,6,7,8-HxCDF-13C	2.00	63
Total PeCDF	ND	-----	0.25		1,2,3,7,8,9-HxCDF-13C	2.00	60
					1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	ND	-----	0.21		1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	ND	-----	0.21		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	ND	-----	0.59		1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	-----	0.58		OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	ND	-----	0.60				
1,2,3,7,8,9-HxCDF	ND	-----	0.71		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2.1	-----	0.62	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.55		2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	-----	0.84	0.61	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.60				
Total HxCDD	7.4	-----	0.59				
1,2,3,4,6,7,8-HpCDF	5.9	-----	1.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.30		Equivalence: 0.45 ng/Kg		
Total HpCDF	20.0	-----	1.20		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	27.0	-----	0.54				
Total HpCDD	77.0	-----	0.54				
OCDF	19.0	-----	1.60				
OCDD	300.0	-----	2.30				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1037-CH (100cm)		
Lab Sample ID	10281617077		
Filename	U141017C_10		
Injected By	BAL		
Total Amount Extracted	13.7 g	Matrix	Solid
% Moisture	15.2	Dilution	NA
Dry Weight Extracted	11.6 g	Collected	10/01/2014 08:00
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/17/2014 21:46

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.29		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	0.47	-----	0.29	J	2,3,7,8-TCDD-13C	2.00	88
					1,2,3,7,8-PeCDF-13C	2.00	59
2,3,7,8-TCDD	0.72	-----	0.40	J	2,3,4,7,8-PeCDF-13C	2.00	51
Total TCDD	1.10	-----	0.40		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	-----	0.40	0.36	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	0.47	-----	0.28	J	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	2.50	-----	0.32	J	1,2,3,7,8,9-HxCDF-13C	2.00	60
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	2.20	-----	0.30	J	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	7.90	-----	0.30		1,2,3,4,6,7,8-HpCDF-13C	2.00	58
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	1.00	-----	0.62	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	-----	0.78	0.57	IJ	OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	0.68	-----	0.56	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.55		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	4.50	-----	0.58		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	1.50	0.44	IJ	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	5.70	-----	0.59				
1,2,3,7,8,9-HxCDD	4.40	-----	0.48				
Total HxCDD	37.00	-----	0.50				
1,2,3,4,6,7,8-HpCDF	24.00	-----	0.85		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	1.30	0.88	IJ	Equivalence: 6.0 ng/Kg		
Total HpCDF	55.00	-----	0.86		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	110.00	-----	0.91				
Total HpCDD	210.00	-----	0.91				
OCDF	30.00	-----	1.80				
OCDD	650.00	-----	1.90				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1035-CH (15cm)		
Lab Sample ID	10281617078		
Filename	U141017C_11		
Injected By	BAL		
Total Amount Extracted	12.3 g	Matrix	Solid
% Moisture	19.8	Dilution	NA
Dry Weight Extracted	9.86 g	Collected	10/01/2014 09:20
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/17/2014 22:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.75	-----	0.44	J	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	3.60	-----	0.44		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	-----	0.56		2,3,4,7,8-PeCDF-13C	2.00	49
Total TCDD	ND	-----	0.56		1,2,3,7,8-PeCDD-13C	2.00	63
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	-----	0.47		1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	1.10	-----	0.41	J	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	13.00	-----	0.44		1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	0.78	-----	0.28	J	1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	3.20	-----	0.28	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	1.60	-----	0.64	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	1.70	-----	0.59	J	OCDD-13C	4.00	37 R
2,3,4,6,7,8-HxCDF	1.10	-----	0.49	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.71		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	23.00	-----	0.61		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.00		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	2.90	-----	0.82	J			
1,2,3,7,8,9-HxCDD	1.50	-----	0.73	J			
Total HxCDD	27.00	-----	0.85				
1,2,3,4,6,7,8-HpCDF	47.00	-----	1.40		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.89		Equivalence: 3.1 ng/Kg		
Total HpCDF	90.00	-----	1.20		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	35.00	-----	0.74				
Total HpCDD	86.00	-----	0.74				
OCDF	23.00	-----	1.50				
OCDD	360.00	-----	3.30				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1035-CH (50cm)			
Lab Sample ID	10281617079			
Filename	U141017C_12			
Injected By	BAL			
Total Amount Extracted	12.8 g	Matrix	Solid	
% Moisture	15.5	Dilution	NA	
Dry Weight Extracted	10.8 g	Collected	10/01/2014	09:25
ICAL ID	U141013	Received	10/01/2014	13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014	19:30
Method Blank ID	BLANK-42342	Analyzed	10/17/2014	23:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.41		2,3,7,8-TCDF-13C	2.00	66
Total TCDF	3.90	-----	0.41		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	54
2,3,7,8-TCDD	ND	-----	0.35		2,3,4,7,8-PeCDF-13C	2.00	47
Total TCDD	1.80	-----	0.35		1,2,3,7,8-PeCDD-13C	2.00	60
					1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	0.43		1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	-----	0.69	0.13	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	12.00	-----	0.28		1,2,3,7,8,9-HxCDF-13C	2.00	56
					1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	0.64	-----	0.28	J	1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	4.70	-----	0.28		1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	-----	0.83	0.64	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	73
1,2,3,6,7,8-HxCDF	-----	0.89	0.65	IJ	OCDD-13C	4.00	37 R
2,3,4,6,7,8-HxCDF	-----	0.72	0.66	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.83		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	13.00	-----	0.70		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.99		2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	-----	1.80	1.20	IJ			
1,2,3,7,8,9-HxCDD	-----	0.83	0.69	IJ			
Total HxCDD	8.00	-----	0.97				
1,2,3,4,6,7,8-HpCDF	31.00	-----	1.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.70		Equivalence: 2.1 ng/Kg		
Total HpCDF	57.00	-----	1.40		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	25.00	-----	0.55				
Total HpCDD	53.00	-----	0.55				
OCDF	18.00	-----	3.00				
OCDD	240.00	-----	3.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1035-CH (100cm)		
Lab Sample ID	10281617080		
Filename	U141017C_13		
Injected By	BAL		
Total Amount Extracted	14.0 g	Matrix	Solid
% Moisture	20.4	Dilution	NA
Dry Weight Extracted	11.1 g	Collected	10/01/2014 09:30
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/17/2014 23:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.50	-----	0.39	J	2,3,7,8-TCDF-13C	2.00	71
Total TCDF	2.80	-----	0.39		2,3,7,8-TCDD-13C	2.00	89
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	0.39		2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	0.90	-----	0.39		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	ND	-----	0.35		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	-----	0.83	0.34	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	12.00	-----	0.35		1,2,3,7,8,9-HxCDF-13C	2.00	62
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	-----	0.49	0.24	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	3.20	-----	0.24	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	62
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	1.70	-----	0.57	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	1.20	-----	0.53	J	OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	-----	0.69	0.62	IJ			
1,2,3,7,8,9-HxCDF	-----	0.64	0.60	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	11.00	-----	0.58		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.67		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	1.80	-----	0.78	J			
1,2,3,7,8,9-HxCDD	0.87	-----	0.46	J			
Total HxCDD	11.00	-----	0.64				
1,2,3,4,6,7,8-HpCDF	25.00	-----	0.81		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.40		Equivalence: 2.2 ng/Kg		
Total HpCDF	53.00	-----	1.10		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	23.00	-----	0.70				
Total HpCDD	46.00	-----	0.70				
OCDF	22.00	-----	1.80				
OCDD	250.00	-----	2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Stantec Consulting Services Inc.

Client's Sample ID	DUP-03-CH		
Lab Sample ID	10281617081		
Filename	U141017C_14		
Injected By	BAL		
Total Amount Extracted	12.4 g	Matrix	Solid
% Moisture	15.0	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	10/01/2014
ICAL ID	U141013	Received	10/01/2014 13:35
CCal Filename(s)	U141017B_10 & U141017C_19	Extracted	10/14/2014 19:30
Method Blank ID	BLANK-42342	Analyzed	10/18/2014 00:22

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.35		2,3,7,8-TCDF-13C	2.00	64
Total TCDF	3.00	-----	0.35		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	57
2,3,7,8-TCDD	ND	-----	0.40		2,3,4,7,8-PeCDF-13C	2.00	49
Total TCDD	ND	-----	0.40		1,2,3,7,8-PeCDD-13C	2.00	62
					1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	-----	0.35	0.35	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	-----	0.48	0.27	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	8.00	-----	0.31		1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	-----	0.62	0.22	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	1.40	-----	0.22	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	-----	1.50	0.48	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	1.30	-----	0.49	J	OCDD-13C	4.00	39 R
2,3,4,6,7,8-HxCDF	0.98	-----	0.32	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.45		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	17.00	-----	0.44		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.70	-----	0.69	J	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	-----	2.50	1.00	IJ			
1,2,3,7,8,9-HxCDD	1.50	-----	0.59	J			
Total HxCDD	25.00	-----	0.76				
1,2,3,4,6,7,8-HpCDF	40.00	-----	1.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.30		Equivalence: 2.7 ng/Kg		
Total HpCDF	85.00	-----	1.30		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	54.00	-----	0.47				
Total HpCDD	130.00	-----	0.47				
OCDF	42.00	-----	1.70				
OCDD	580.00	-----	2.50				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42150	Matrix	Solid
Filename	U140930A_05	Dilution	NA
Total Amount Extracted	14.5 g	Extracted	09/27/2014 13:45
ICAL ID	U140925	Analyzed	09/30/2014 11:22
CCal Filename(s)	U140929B_21 & U140930A_11	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.078	0.075	IJ	2,3,7,8-TCDF-13C	2.00	84
Total TCDF	ND	-----	0.075		2,3,7,8-TCDD-13C	2.00	97
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	0.082		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	0.11	-----	0.082	J	1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	ND	-----	0.067		1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	ND	-----	0.050		2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	ND	-----	0.059		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	ND	-----	0.066		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	ND	-----	0.066		1,2,3,4,6,7,8-HpCDF-13C	2.00	84
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.035		1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	ND	-----	0.041		OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	ND	-----	0.042				
1,2,3,7,8,9-HxCDF	ND	-----	0.061		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.045		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.069		2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	ND	-----	0.069				
1,2,3,7,8,9-HxCDD	ND	-----	0.062				
Total HxCDD	ND	-----	0.067				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.056		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.110		Equivalence: 0.0078 ng/Kg		
Total HpCDF	ND	-----	0.082		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.110				
Total HpCDD	ND	-----	0.110				
OCDF	ND	-----	0.170				
OCDD	ND	-----	0.240				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42130	Matrix	Solid
Filename	U141002A_18	Dilution	NA
Total Amount Extracted	20.0 g	Extracted	09/25/2014 18:15
ICAL ID	U140925	Analyzed	10/02/2014 09:14
CCal Filename(s)	U141001B_21 & U141002A_19	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.091		2,3,7,8-TCDF-13C	2.00	79
Total TCDF	ND	-----	0.091		2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	-----	0.068		2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	0.082	-----	0.068	J	1,2,3,7,8-PeCDD-13C	2.00	82
					1,2,3,4,7,8-HxCDF-13C	2.00	88
1,2,3,7,8-PeCDF	ND	-----	0.072		1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	0.050		2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	ND	-----	0.061		1,2,3,7,8,9-HxCDF-13C	2.00	83
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	-----	0.057		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.057		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	ND	-----	0.051		1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	ND	-----	0.054		OCDD-13C	4.00	67
2,3,4,6,7,8-HxCDF	ND	-----	0.047				
1,2,3,7,8,9-HxCDF	ND	-----	0.064		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.054		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.065		2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	ND	-----	0.066				
1,2,3,7,8,9-HxCDD	ND	-----	0.065				
Total HxCDD	ND	-----	0.065				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.046		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.067		Equivalence: 0.000025 ng/Kg		
Total HpCDF	ND	-----	0.057		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.077				
Total HpCDD	ND	-----	0.077				
OCDF	ND	-----	0.160				
OCDD	0.250	-----	0.180	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42179	Matrix	Solid
Filename	F141008A_10	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	10/01/2014 19:20
ICAL ID	F140918	Analyzed	10/08/2014 20:51
CCal Filename(s)	F141008A_01 & F141008A_18	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.099	0.053	IJ	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	0.068	-----	0.053	J	2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	0.050		2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	ND	-----	0.050		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	0.050		1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	ND	-----	0.044		2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	ND	-----	0.047		1,2,3,7,8,9-HxCDF-13C	2.00	63
					1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	ND	-----	0.034		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.034		1,2,3,4,6,7,8-HpCDF-13C	2.00	61
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	ND	-----	0.041		1,2,3,4,6,7,8-HpCDD-13C	2.00	59
1,2,3,6,7,8-HxCDF	ND	-----	0.043		OCDD-13C	4.00	49
2,3,4,6,7,8-HxCDF	ND	-----	0.040				
1,2,3,7,8,9-HxCDF	ND	-----	0.053		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.045		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.045		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	0.048				
1,2,3,7,8,9-HxCDD	ND	-----	0.054				
Total HxCDD	ND	-----	0.049				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.039		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.069		Equivalence: 0.0099 ng/Kg		
Total HpCDF	ND	-----	0.054		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.068				
Total HpCDD	ND	-----	0.068				
OCDF	ND	-----	0.130				
OCDD	ND	-----	0.200				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42200	Matrix	Solid
Filename	F141008B_02	Dilution	NA
Total Amount Extracted	10.0 g	Extracted	10/02/2014 19:30
ICAL ID	F140918	Analyzed	10/09/2014 04:03
CCal Filename(s)	F141008A_18 & F141008B_11	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.071		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	0.170	-----	0.071	J	2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.110		2,3,4,7,8-PeCDF-13C	2.00	58
Total TCDD	ND	-----	0.110		1,2,3,7,8-PeCDD-13C	2.00	67
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	-----	0.050	0.050	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	-----	0.073	0.043	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF	0.057	-----	0.047	J	1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	ND	-----	0.055		1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	ND	-----	0.055		1,2,3,4,6,7,8-HpCDF-13C	2.00	66
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	0.100	-----	0.077	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	ND	-----	0.085		OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	-----	0.069				
1,2,3,7,8,9-HxCDF	-----	0.100	0.088	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.100	-----	0.080	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.110		2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	ND	-----	0.130				
1,2,3,7,8,9-HxCDD	ND	-----	0.130				
Total HxCDD	ND	-----	0.130				
1,2,3,4,6,7,8-HpCDF	-----	0.140	0.068	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.140	-----	0.110	J	Equivalence: 0.063 ng/Kg		
Total HpCDF	0.140	-----	0.088	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.097	0.079	IJ			
Total HpCDD	ND	-----	0.079				
OCDF	-----	0.430	0.200	IJ			
OCDD	0.540	-----	0.220	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42210	Matrix	Solid
Filename	U141010A_07	Dilution	NA
Total Amount Extracted	20.2 g	Extracted	10/03/2014 19:30
ICAL ID	U140925	Analyzed	10/10/2014 12:17
CCal Filename(s)	U141009C_11 & U141010A_15	Injected By	CVS

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.035		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	0.48	-----	0.035	J	2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	-----	0.047		2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	ND	-----	0.047		1,2,3,7,8-PeCDD-13C	2.00	77
					1,2,3,4,7,8-HxCDF-13C	2.00	99
1,2,3,7,8-PeCDF	ND	-----	0.041		1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	ND	-----	0.034		2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	ND	-----	0.038		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	95
1,2,3,7,8-PeCDD	ND	-----	0.043		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	-----	0.043		1,2,3,4,6,7,8-HpCDF-13C	2.00	67
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	-----	0.078		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	ND	-----	0.069		OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	0.080				
1,2,3,7,8,9-HxCDF	ND	-----	0.110		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.085		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.068		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	0.070				
1,2,3,7,8,9-HxCDD	ND	-----	0.066				
Total HxCDD	ND	-----	0.068				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.150		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.290		Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	0.220		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.093				
Total HpCDD	ND	-----	0.093				
OCDF	ND	-----	0.300				
OCDD	ND	-----	0.440				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42249	Matrix	Solid
Filename	U141013B_11	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	10/07/2014 20:00
ICAL ID	U141013	Analyzed	10/13/2014 22:58
CCal Filename(s)	U141013B_08 & U141013B_27	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.19		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.19		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	ND	-----	0.13		2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	0.17	-----	0.13	J	1,2,3,7,8-PeCDD-13C	2.00	74
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.19		1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	-----	0.16	0.12	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	-----	0.16		1,2,3,7,8,9-HxCDF-13C	2.00	69
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	-----	0.17	0.14	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.14		1,2,3,4,6,7,8-HpCDF-13C	2.00	65
					1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	0.29		1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	ND	-----	0.24		OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	ND	-----	0.27				
1,2,3,7,8,9-HxCDF	ND	-----	0.36		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.29		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.24		2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	0.26				
1,2,3,7,8,9-HxCDD	ND	-----	0.24				
Total HxCDD	ND	-----	0.24				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.36		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.62		Equivalence: 0.25 ng/Kg		
Total HpCDF	ND	-----	0.49		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.33				
Total HpCDD	ND	-----	0.33				
OCDF	ND	-----	0.84				
OCDD	ND	-----	1.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42292	Matrix	Solid
Filename	F141016A_16	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	10/09/2014 20:55
ICAL ID	F141016	Analyzed	10/16/2014 22:54
CCal Filename(s)	F141016A_04 & F141016A_20	Injected By	SMT

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDF	ND	-----	0.090	2,3,7,8-TCDF-13C	2.00	42
Total TCDF	ND	-----	0.090	2,3,7,8-TCDD-13C	2.00	79
				1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	-----	0.120	2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	ND	-----	0.120	1,2,3,7,8-PeCDD-13C	2.00	77
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.130	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.120	2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.130	1,2,3,7,8,9-HxCDF-13C	2.00	70
				1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	ND	-----	0.130	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.130	1,2,3,4,6,7,8-HpCDF-13C	2.00	62
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	-----	0.180	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	ND	-----	0.170	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	ND	-----	0.160			
1,2,3,7,8,9-HxCDF	ND	-----	0.200	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.180	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.150	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	-----	0.150			
1,2,3,7,8,9-HxCDD	ND	-----	0.180			
Total HxCDD	ND	-----	0.160			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.350	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.420	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	0.380	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.200			
Total HpCDD	ND	-----	0.200			
OCDF	ND	-----	0.750			
OCDD	ND	-----	0.550			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42342	Matrix	Solid
Filename	U141017B_04	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	10/14/2014 19:30
ICAL ID	U141013	Analyzed	10/17/2014 10:41
CCal Filename(s)	U141017B_01 & U141017B_10	Injected By	CVS

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.041		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.041		2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	59
2,3,7,8-TCDD	ND	-----	0.063		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	0.083	-----	0.063	J	1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	0.056		1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	0.050		2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	ND	-----	0.053		1,2,3,7,8,9-HxCDF-13C	2.00	61
					1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	-----	0.049		1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	ND	-----	0.049		1,2,3,4,6,7,8-HpCDF-13C	2.00	52
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	0.170		1,2,3,4,6,7,8-HpCDD-13C	2.00	55
1,2,3,6,7,8-HxCDF	ND	-----	0.150		OCDD-13C	4.00	41
2,3,4,6,7,8-HxCDF	ND	-----	0.140				
1,2,3,7,8,9-HxCDF	ND	-----	0.220		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.170		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.210		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	0.210				
1,2,3,7,8,9-HxCDD	ND	-----	0.210				
Total HxCDD	ND	-----	0.210				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.380		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.570		Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	0.470		(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.310				
Total HpCDD	ND	-----	0.310				
OCDF	ND	-----	0.690				
OCDD	ND	-----	1.300				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-42491	Matrix	Solid
Filename	F141026B_04	Dilution	NA
Total Amount Extracted	10.9 g	Extracted	10/22/2014 13:20
ICAL ID	F141016	Analyzed	10/26/2014 14:16
CCal Filename(s)	F141026B_02 & F141026B_19	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.23		2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	-----	0.23		2,3,7,8-TCDD-13C	2.00	72
					1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	-----	0.23		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	ND	-----	0.23		1,2,3,7,8-PeCDD-13C	2.00	77
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.26		1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	0.20		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	ND	-----	0.23		1,2,3,7,8,9-HxCDF-13C	2.00	73
					1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.16		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.16		1,2,3,4,6,7,8-HpCDF-13C	2.00	88
					1,2,3,4,7,8,9-HpCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	ND	-----	0.17		1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	ND	-----	0.14		OCDD-13C	4.00	65
2,3,4,6,7,8-HxCDF	-----	0.23	0.18	IJ			
1,2,3,7,8,9-HxCDF	-----	0.21	0.19	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.17		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.17		2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	-----	0.19	0.16	IJ			
1,2,3,7,8,9-HxCDD	-----	0.17	0.16	IJ			
Total HxCDD	ND	-----	0.17				
1,2,3,4,6,7,8-HpCDF	0.28	-----	0.19	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.42	0.32	IJ	Equivalence: 0.091 ng/Kg		
Total HpCDF	0.28	-----	0.26	J	(Using 1998 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.28	0.19	IJ			
Total HpCDD	0.22	-----	0.19	J			
OCDF	-----	0.86	0.45	IJ			
OCDD	-----	0.87	0.48	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42151		
Filename	F140930B_04	Matrix	Solid
Total Amount Extracted	11.1 g	Dilution	NA
ICAL ID	F140918	Extracted	09/27/2014 13:45
CCal Filename(s)	F140930B_01 & F140930B_06	Analyzed	09/30/2014 11:35
Method Blank ID	BLANK-42150	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	98	2,3,7,8-TCDF-13C	2.0	87
Total TCDF				2,3,7,8-TCDD-13C	2.0	95
				1,2,3,7,8-PeCDF-13C	2.0	67
2,3,7,8-TCDD	0.20	0.17	83	2,3,4,7,8-PeCDF-13C	2.0	62
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	66
				1,2,3,4,7,8-HxCDF-13C	2.0	96
1,2,3,7,8-PeCDF	1.0	0.99	99	1,2,3,6,7,8-HxCDF-13C	2.0	89
2,3,4,7,8-PeCDF	1.0	0.96	96	2,3,4,6,7,8-HxCDF-13C	2.0	92
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	84
				1,2,3,4,7,8-HxCDD-13C	2.0	91
1,2,3,7,8-PeCDD	1.0	0.83	83	1,2,3,6,7,8-HxCDD-13C	2.0	75
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	79
				1,2,3,4,7,8,9-HpCDF-13C	2.0	75
1,2,3,4,7,8-HxCDF	1.0	0.98	98	1,2,3,4,6,7,8-HpCDD-13C	2.0	73
1,2,3,6,7,8-HxCDF	1.0	0.95	95	OCDD-13C	4.0	63
2,3,4,6,7,8-HxCDF	1.0	0.90	90			
1,2,3,7,8,9-HxCDF	1.0	0.96	96	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	0.94	94	2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	1.0	1.0	101			
1,2,3,7,8,9-HxCDD	1.0	0.95	95			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	0.95	95			
1,2,3,4,7,8,9-HpCDF	1.0	0.86	86			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.88	88			
Total HpCDD						
OCDF	2.0	1.8	89			
OCDD	2.0	1.9	96			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42131		
Filename	F141001B_03	Matrix	Solid
Total Amount Extracted	20.7 g	Dilution	NA
ICAL ID	F140918	Extracted	09/25/2014 18:15
CCal Filename(s)	F141001B_02 & F141001B_20	Analyzed	10/01/2014 17:22
Method Blank ID	BLANK-42130	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.20	0.20	101	2,3,7,8-TCDF-13C	2.0	77	
Total TCDF				2,3,7,8-TCDD-13C	2.0	92	
				1,2,3,7,8-PeCDF-13C	2.0	70	
2,3,7,8-TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C	2.0	65	
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	80	
				1,2,3,4,7,8-HxCDF-13C	2.0	81	
1,2,3,7,8-PeCDF	1.0	1.0	100	1,2,3,6,7,8-HxCDF-13C	2.0	77	
2,3,4,7,8-PeCDF	1.0	1.0	102	2,3,4,6,7,8-HxCDF-13C	2.0	79	
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	76	
				1,2,3,4,7,8-HxCDD-13C	2.0	89	
1,2,3,7,8-PeCDD	1.0	0.84	84	1,2,3,6,7,8-HxCDD-13C	2.0	74	
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	92	
				1,2,3,4,7,8,9-HpCDF-13C	2.0	84	
1,2,3,4,7,8-HxCDF	1.0	1.0	102	1,2,3,4,6,7,8-HpCDD-13C	2.0	90	
1,2,3,6,7,8-HxCDF	1.0	0.99	99	OCDD-13C	4.0	80	Y
2,3,4,6,7,8-HxCDF	1.0	0.95	95				
1,2,3,7,8,9-HxCDF	1.0	0.98	98	1,2,3,4-TCDD-13C	2.0	NA	
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA	
1,2,3,4,7,8-HxCDD	1.0	0.96	96	2,3,7,8-TCDD-37Cl4	0.20	88	
1,2,3,6,7,8-HxCDD	1.0	1.0	102				
1,2,3,7,8,9-HxCDD	1.0	0.96	96				
Total HxCDD							
1,2,3,4,6,7,8-HpCDF	1.0	0.98	98				
1,2,3,4,7,8,9-HpCDF	1.0	0.89	89				
Total HpCDF							
1,2,3,4,6,7,8-HpCDD	1.0	0.91	91				
Total HpCDD							
OCDF	2.0	1.7	85				
OCDD	2.0	2.0	100				

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42180		
Filename	F141008A_02	Matrix	Solid
Total Amount Extracted	20.6 g	Dilution	NA
ICAL ID	F140918	Extracted	10/01/2014 19:20
CCal Filename(s)	F141008A_01 & F141008A_18	Analyzed	10/08/2014 15:07
Method Blank ID	BLANK-42179	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	114	2,3,7,8-TCDF-13C	2.0	66
Total TCDF				2,3,7,8-TCDD-13C	2.0	74
				1,2,3,7,8-PeCDF-13C	2.0	59
2,3,7,8-TCDD	0.20	0.21	103	2,3,4,7,8-PeCDF-13C	2.0	56
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	64
				1,2,3,4,7,8-HxCDF-13C	2.0	66
1,2,3,7,8-PeCDF	1.0	1.2	118	1,2,3,6,7,8-HxCDF-13C	2.0	64
2,3,4,7,8-PeCDF	1.0	1.2	116	2,3,4,6,7,8-HxCDF-13C	2.0	65
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	62
				1,2,3,4,7,8-HxCDD-13C	2.0	73
1,2,3,7,8-PeCDD	1.0	1.0	101	1,2,3,6,7,8-HxCDD-13C	2.0	59
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	62
				1,2,3,4,7,8,9-HpCDF-13C	2.0	59
1,2,3,4,7,8-HxCDF	1.0	1.1	115	1,2,3,4,6,7,8-HpCDD-13C	2.0	61
1,2,3,6,7,8-HxCDF	1.0	1.1	110	OCDD-13C	4.0	51
2,3,4,6,7,8-HxCDF	1.0	1.1	106			
1,2,3,7,8,9-HxCDF	1.0	1.1	111	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	108	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	1.0	1.2	116			
1,2,3,7,8,9-HxCDD	1.0	1.1	107			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	114			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	103			
Total HpCDD						
OCDF	2.0	2.0	100			
OCDD	2.0	2.3	114			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42201		
Filename	F141008A_05	Matrix	Solid
Total Amount Extracted	10.2 g	Dilution	NA
ICAL ID	F140918	Extracted	10/02/2014 19:30
CCal Filename(s)	F141008A_01 & F141008A_18	Analyzed	10/08/2014 17:15
Method Blank ID	BLANK-42200	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	103	2,3,7,8-TCDF-13C	2.0	69
Total TCDF				2,3,7,8-TCDD-13C	2.0	78
				1,2,3,7,8-PeCDF-13C	2.0	64
2,3,7,8-TCDD	0.20	0.18	90	2,3,4,7,8-PeCDF-13C	2.0	62
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	71
				1,2,3,4,7,8-HxCDF-13C	2.0	63
1,2,3,7,8-PeCDF	1.0	1.0	104	1,2,3,6,7,8-HxCDF-13C	2.0	66
2,3,4,7,8-PeCDF	1.0	1.0	103	2,3,4,6,7,8-HxCDF-13C	2.0	67
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	63
				1,2,3,4,7,8-HxCDD-13C	2.0	69
1,2,3,7,8-PeCDD	1.0	0.90	90	1,2,3,6,7,8-HxCDD-13C	2.0	64
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	61
				1,2,3,4,7,8,9-HpCDF-13C	2.0	59
1,2,3,4,7,8-HxCDF	1.0	1.1	108	1,2,3,4,6,7,8-HpCDD-13C	2.0	62
1,2,3,6,7,8-HxCDF	1.0	0.97	97	OCDD-13C	4.0	53
2,3,4,6,7,8-HxCDF	1.0	0.95	95			
1,2,3,7,8,9-HxCDF	1.0	0.98	98	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	0.98	98	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	1.0	1.0	105			
1,2,3,7,8,9-HxCDD	1.0	0.98	98			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.0	104			
1,2,3,4,7,8,9-HpCDF	1.0	0.92	92			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.95	95			
Total HpCDD						
OCDF	2.0	1.8	90			
OCDD	2.0	2.1	104			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42211		
Filename	U141010A_01	Matrix	Solid
Total Amount Extracted	20.5 g	Dilution	NA
ICAL ID	U140925	Extracted	10/03/2014 19:30
CCal Filename(s)	U141009C_11 & U141010A_15	Analyzed	10/10/2014 08:25
Method Blank ID	BLANK-42210	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	113	2,3,7,8-TCDF-13C	2.0	74
Total TCDF				2,3,7,8-TCDD-13C	2.0	78
				1,2,3,7,8-PeCDF-13C	2.0	71
2,3,7,8-TCDD	0.20	0.20	101	2,3,4,7,8-PeCDF-13C	2.0	64
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	71
				1,2,3,4,7,8-HxCDF-13C	2.0	85
1,2,3,7,8-PeCDF	1.0	1.1	110	1,2,3,6,7,8-HxCDF-13C	2.0	84
2,3,4,7,8-PeCDF	1.0	1.1	112	2,3,4,6,7,8-HxCDF-13C	2.0	81
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	76
				1,2,3,4,7,8-HxCDD-13C	2.0	83
1,2,3,7,8-PeCDD	1.0	0.99	99	1,2,3,6,7,8-HxCDD-13C	2.0	74
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	71
				1,2,3,4,7,8,9-HpCDF-13C	2.0	63
1,2,3,4,7,8-HxCDF	1.0	1.1	112	1,2,3,4,6,7,8-HpCDD-13C	2.0	69
1,2,3,6,7,8-HxCDF	1.0	1.1	110	OCDD-13C	4.0	55
2,3,4,6,7,8-HxCDF	1.0	1.0	104			
1,2,3,7,8,9-HxCDF	1.0	1.1	112	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	117	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	1.0	1.2	121			
1,2,3,7,8,9-HxCDD	1.0	1.2	115			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	115			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	105			
Total HpCDD						
OCDF	2.0	2.3	114			
OCDD	2.0	2.4	119			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42250		
Filename	U141013B_09	Matrix	Solid
Total Amount Extracted	10.6 g	Dilution	NA
ICAL ID	U141013	Extracted	10/07/2014 20:00
CCal Filename(s)	U141013B_08 & U141013B_27	Analyzed	10/13/2014 21:40
Method Blank ID	BLANK-42249	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	114	2,3,7,8-TCDF-13C	2.0	65
Total TCDF				2,3,7,8-TCDD-13C	2.0	81
				1,2,3,7,8-PeCDF-13C	2.0	69
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.0	64
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	73
				1,2,3,4,7,8-HxCDF-13C	2.0	70
1,2,3,7,8-PeCDF	1.0	1.1	113	1,2,3,6,7,8-HxCDF-13C	2.0	75
2,3,4,7,8-PeCDF	1.0	1.1	111	2,3,4,6,7,8-HxCDF-13C	2.0	69
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	66
				1,2,3,4,7,8-HxCDD-13C	2.0	72
1,2,3,7,8-PeCDD	1.0	0.97	97	1,2,3,6,7,8-HxCDD-13C	2.0	65
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	64
				1,2,3,4,7,8,9-HpCDF-13C	2.0	56
1,2,3,4,7,8-HxCDF	1.0	1.2	116	1,2,3,4,6,7,8-HpCDD-13C	2.0	69
1,2,3,6,7,8-HxCDF	1.0	1.1	106	OCDD-13C	4.0	46
2,3,4,6,7,8-HxCDF	1.0	1.0	103			
1,2,3,7,8,9-HxCDF	1.0	1.1	106	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	107	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	1.0	1.2	118			
1,2,3,7,8,9-HxCDD	1.0	1.1	114			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	116			
1,2,3,4,7,8,9-HpCDF	1.0	1.1	109			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.99	99			
Total HpCDD						
OCDF	2.0	2.1	103			
OCDD	2.0	2.3	114			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42293		
Filename	F141016A_12	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	F141016	Extracted	10/09/2014 20:55
CCal Filename(s)	F141016A_04 & F141016A_20	Analyzed	10/16/2014 20:00
Method Blank ID	BLANK-42292	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	107	2,3,7,8-TCDF-13C	2.0	76
Total TCDF				2,3,7,8-TCDD-13C	2.0	88
				1,2,3,7,8-PeCDF-13C	2.0	81
2,3,7,8-TCDD	0.20	0.19	94	2,3,4,7,8-PeCDF-13C	2.0	77
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	90
				1,2,3,4,7,8-HxCDF-13C	2.0	76
1,2,3,7,8-PeCDF	1.0	1.1	108	1,2,3,6,7,8-HxCDF-13C	2.0	76
2,3,4,7,8-PeCDF	1.0	1.1	112	2,3,4,6,7,8-HxCDF-13C	2.0	78
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	77
				1,2,3,4,7,8-HxCDD-13C	2.0	73
1,2,3,7,8-PeCDD	1.0	0.98	98	1,2,3,6,7,8-HxCDD-13C	2.0	73
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	70
				1,2,3,4,7,8,9-HpCDF-13C	2.0	68
1,2,3,4,7,8-HxCDF	1.0	1.2	116	1,2,3,4,6,7,8-HpCDD-13C	2.0	79
1,2,3,6,7,8-HxCDF	1.0	1.1	109	OCDD-13C	4.0	65
2,3,4,6,7,8-HxCDF	1.0	1.1	110			
1,2,3,7,8,9-HxCDF	1.0	1.1	110	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	114	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.0	1.2	116			
1,2,3,7,8,9-HxCDD	1.0	1.1	111			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	111			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	102			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.98	98			
Total HpCDD						
OCDF	2.0	2.2	111			
OCDD	2.0	2.3	115			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42343		
Filename	U141017B_02	Matrix	Solid
Total Amount Extracted	20.5 g	Dilution	NA
ICAL ID	U141013	Extracted	10/14/2014 19:30
CCal Filename(s)	U141017B_01 & U141017B_10	Analyzed	10/17/2014 09:25
Method Blank ID	BLANK-42342	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	107	2,3,7,8-TCDF-13C	2.0	67
Total TCDF				2,3,7,8-TCDD-13C	2.0	79
				1,2,3,7,8-PeCDF-13C	2.0	59
2,3,7,8-TCDD	0.20	0.18	92	2,3,4,7,8-PeCDF-13C	2.0	53
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	61
				1,2,3,4,7,8-HxCDF-13C	2.0	71
1,2,3,7,8-PeCDF	1.0	1.0	104	1,2,3,6,7,8-HxCDF-13C	2.0	70
2,3,4,7,8-PeCDF	1.0	1.0	104	2,3,4,6,7,8-HxCDF-13C	2.0	70
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	65
				1,2,3,4,7,8-HxCDD-13C	2.0	71
1,2,3,7,8-PeCDD	1.0	0.92	92	1,2,3,6,7,8-HxCDD-13C	2.0	69
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	58
				1,2,3,4,7,8,9-HpCDF-13C	2.0	52
1,2,3,4,7,8-HxCDF	1.0	1.1	109	1,2,3,4,6,7,8-HpCDD-13C	2.0	61
1,2,3,6,7,8-HxCDF	1.0	1.0	103	OCDD-13C	4.0	44
2,3,4,6,7,8-HxCDF	1.0	0.98	98			
1,2,3,7,8,9-HxCDF	1.0	1.0	102	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	0.97	97	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	1.0	1.1	115			
1,2,3,7,8,9-HxCDD	1.0	1.1	107			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	115			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	104			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	100			
Total HpCDD						
OCDF	2.0	2.4	118			
OCDD	2.0	2.4	121			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-42492		
Filename	F141027C_01	Matrix	Solid
Total Amount Extracted	10.6 g	Dilution	NA
ICAL ID	F141016	Extracted	10/22/2014 13:20
CCal Filename(s)	F141027B_09 & F141027C_18	Analyzed	10/27/2014 16:25
Method Blank ID	BLANK-42491	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.0	72
Total TCDF				2,3,7,8-TCDD-13C	2.0	83
				1,2,3,7,8-PeCDF-13C	2.0	82
2,3,7,8-TCDD	0.20	0.19	96	2,3,4,7,8-PeCDF-13C	2.0	82
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	90
				1,2,3,4,7,8-HxCDF-13C	2.0	72
1,2,3,7,8-PeCDF	1.0	1.3	127	1,2,3,6,7,8-HxCDF-13C	2.0	83
2,3,4,7,8-PeCDF	1.0	1.2	125	2,3,4,6,7,8-HxCDF-13C	2.0	85
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	78
				1,2,3,4,7,8-HxCDD-13C	2.0	72
1,2,3,7,8-PeCDD	1.0	1.1	106	1,2,3,6,7,8-HxCDD-13C	2.0	74
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	85
				1,2,3,4,7,8,9-HpCDF-13C	2.0	74
1,2,3,4,7,8-HxCDF	1.0	1.3	128	1,2,3,4,6,7,8-HpCDD-13C	2.0	90
1,2,3,6,7,8-HxCDF	1.0	1.3	126	OCDD-13C	4.0	70
2,3,4,6,7,8-HxCDF	1.0	1.2	117			
1,2,3,7,8,9-HxCDF	1.0	1.2	116	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	120	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	1.0	1.3	129			
1,2,3,7,8,9-HxCDD	1.0	1.2	125			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	117			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	104			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.1	103			
OCDD	2.0	2.3	116			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-42137		
Filename	F141001B_04	Matrix	Solid
Total Amount Extracted	20.2 g	Dilution	NA
ICAL ID	F140918	Extracted	09/25/2014 18:15
CCal Filename(s)	F141001B_02 & F141001B_20	Analyzed	10/01/2014 18:04
Method Blank ID	BLANK-42130	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C	2.0	77	
Total TCDF				2,3,7,8-TCDD-13C	2.0	93	
				1,2,3,7,8-PeCDF-13C	2.0	68	
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.0	64	
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	80	
				1,2,3,4,7,8-HxCDF-13C	2.0	82	
1,2,3,7,8-PeCDF	1.0	1.1	106	1,2,3,6,7,8-HxCDF-13C	2.0	80	
2,3,4,7,8-PeCDF	1.0	1.1	106	2,3,4,6,7,8-HxCDF-13C	2.0	80	
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	77	
				1,2,3,4,7,8-HxCDD-13C	2.0	94	
1,2,3,7,8-PeCDD	1.0	0.86	86	1,2,3,6,7,8-HxCDD-13C	2.0	73	
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	93	
				1,2,3,4,7,8,9-HpCDF-13C	2.0	84	
1,2,3,4,7,8-HxCDF	1.0	1.0	104	1,2,3,4,6,7,8-HpCDD-13C	2.0	93	
1,2,3,6,7,8-HxCDF	1.0	1.0	101	OCDD-13C	4.0	82	Y
2,3,4,6,7,8-HxCDF	1.0	0.97	97				
1,2,3,7,8,9-HxCDF	1.0	1.00	100	1,2,3,4-TCDD-13C	2.0	NA	
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA	
1,2,3,4,7,8-HxCDD	1.0	0.94	94	2,3,7,8-TCDD-37Cl4	0.20	86	
1,2,3,6,7,8-HxCDD	1.0	1.1	111				
1,2,3,7,8,9-HxCDD	1.0	0.99	99				
Total HxCDD							
1,2,3,4,6,7,8-HpCDF	1.0	1.0	103				
1,2,3,4,7,8,9-HpCDF	1.0	0.94	94				
Total HpCDF							
1,2,3,4,6,7,8-HpCDD	1.0	0.93	93				
Total HpCDD							
OCDF	2.0	1.8	88				
OCDD	2.0	2.1	104				

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-42212		
Filename	U141010A_02	Matrix	Solid
Total Amount Extracted	20.3 g	Dilution	NA
ICAL ID	U140925	Extracted	10/03/2014 19:30
CCal Filename(s)	U141009C_11 & U141010A_15	Analyzed	10/10/2014 09:02
Method Blank ID	BLANK-42210	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.25	123	2,3,7,8-TCDF-13C	2.0	68
Total TCDF				2,3,7,8-TCDD-13C	2.0	55
				1,2,3,7,8-PeCDF-13C	2.0	69
2,3,7,8-TCDD	0.20	0.21	107	2,3,4,7,8-PeCDF-13C	2.0	62
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	67
				1,2,3,4,7,8-HxCDF-13C	2.0	84
1,2,3,7,8-PeCDF	1.0	1.2	119	1,2,3,6,7,8-HxCDF-13C	2.0	79
2,3,4,7,8-PeCDF	1.0	1.2	117	2,3,4,6,7,8-HxCDF-13C	2.0	77
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	73
				1,2,3,4,7,8-HxCDD-13C	2.0	85
1,2,3,7,8-PeCDD	1.0	1.0	104	1,2,3,6,7,8-HxCDD-13C	2.0	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	70
				1,2,3,4,7,8,9-HpCDF-13C	2.0	54
1,2,3,4,7,8-HxCDF	1.0	1.2	117	1,2,3,4,6,7,8-HpCDD-13C	2.0	66
1,2,3,6,7,8-HxCDF	1.0	1.2	119	OCDD-13C	4.0	53
2,3,4,6,7,8-HxCDF	1.0	1.1	112			
1,2,3,7,8,9-HxCDF	1.0	1.2	118	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	122	2,3,7,8-TCDD-37Cl4	0.20	53
1,2,3,6,7,8-HxCDD	1.0	1.3	129			
1,2,3,7,8,9-HxCDD	1.0	1.1	114			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.2	119			
1,2,3,4,7,8,9-HpCDF	1.0	1.2	115			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.1	111			
Total HpCDD						
OCDF	2.0	2.4	118			
OCDD	2.0	2.5	124			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-42493		
Filename	F141027C_02	Matrix	Solid
Total Amount Extracted	10.4 g	Dilution	NA
ICAL ID	F141016	Extracted	10/22/2014 13:20
CCal Filename(s)	F141027B_09 & F141027C_18	Analyzed	10/27/2014 17:08
Method Blank ID	BLANK-42491	Injected By	

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	120	2,3,7,8-TCDF-13C	2.0	59
Total TCDF				2,3,7,8-TCDD-13C	2.0	71
				1,2,3,7,8-PeCDF-13C	2.0	76
2,3,7,8-TCDD	0.20	0.19	94	2,3,4,7,8-PeCDF-13C	2.0	77
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	85
				1,2,3,4,7,8-HxCDF-13C	2.0	71
1,2,3,7,8-PeCDF	1.0	1.3	127	1,2,3,6,7,8-HxCDF-13C	2.0	84
2,3,4,7,8-PeCDF	1.0	1.3	125	2,3,4,6,7,8-HxCDF-13C	2.0	86
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	77
				1,2,3,4,7,8-HxCDD-13C	2.0	71
1,2,3,7,8-PeCDD	1.0	1.1	105	1,2,3,6,7,8-HxCDD-13C	2.0	78
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	86
				1,2,3,4,7,8,9-HpCDF-13C	2.0	73
1,2,3,4,7,8-HxCDF	1.0	1.3	130	1,2,3,4,6,7,8-HpCDD-13C	2.0	93
1,2,3,6,7,8-HxCDF	1.0	1.2	124	OCDD-13C	4.0	67
2,3,4,6,7,8-HxCDF	1.0	1.2	115			
1,2,3,7,8,9-HxCDF	1.0	1.2	117	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	120	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	1.0	1.3	126			
1,2,3,7,8,9-HxCDD	1.0	1.2	121			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	112			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.99	99			
Total HpCDD						
OCDF	2.0	2.0	102			
OCDD	2.0	2.4	118			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client Stantec Consulting Services Inc.

Spike 1 ID LCS-42131 Spike 2 ID LCSD-42137
Spike 1 Filename F141001B_03 Spike 2 Filename F141001B_04

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	101	106	4.8
2,3,7,8-TCDD	89	91	2.2
1,2,3,7,8-PeCDF	100	106	5.8
2,3,4,7,8-PeCDF	102	106	3.8
1,2,3,7,8-PeCDD	84	86	2.4
1,2,3,4,7,8-HxCDF	102	104	1.9
1,2,3,6,7,8-HxCDF	99	101	2.0
2,3,4,6,7,8-HxCDF	95	97	2.1
1,2,3,7,8,9-HxCDF	98	100	2.0
1,2,3,4,7,8-HxCDD	96	94	2.1
1,2,3,6,7,8-HxCDD	102	111	8.5
1,2,3,7,8,9-HxCDD	96	99	3.1
1,2,3,4,6,7,8-HpCDF	98	103	5.0
1,2,3,4,7,8,9-HpCDF	89	94	5.5
1,2,3,4,6,7,8-HpCDD	91	93	2.2
OCDF	85	88	3.5
OCDD	100	104	3.9

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	Stantec Consulting Services Inc.		
Spike 1 ID	LCS-42211	Spike 2 ID	LCSD-42212
Spike 1 Filename	U141010A_01	Spike 2 Filename	U141010A_02

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	113	123	8.5
2,3,7,8-TCDD	101	107	5.8
1,2,3,7,8-PeCDF	110	119	7.9
2,3,4,7,8-PeCDF	112	117	4.4
1,2,3,7,8-PeCDD	99	104	4.9
1,2,3,4,7,8-HxCDF	112	117	4.4
1,2,3,6,7,8-HxCDF	110	119	7.9
2,3,4,6,7,8-HxCDF	104	112	7.4
1,2,3,7,8,9-HxCDF	112	118	5.2
1,2,3,4,7,8-HxCDD	117	122	4.2
1,2,3,6,7,8-HxCDD	121	129	6.4
1,2,3,7,8,9-HxCDD	115	114	0.9
1,2,3,4,6,7,8-HpCDF	115	119	3.4
1,2,3,4,7,8,9-HpCDF	103	115	11.0
1,2,3,4,6,7,8-HpCDD	105	111	5.6
OCDF	114	118	3.4
OCDD	119	124	4.1

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client: Stantec Consulting Services Inc.

Spike 1 ID: LCS-42492
Spike 1 Filename: F141027C_01
Spike 2 ID: LCSD-42493
Spike 2 Filename: F141027C_02

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	116	120	3.4
2,3,7,8-TCDD	96	94	2.1
1,2,3,7,8-PeCDF	127	127	0.0
2,3,4,7,8-PeCDF	125	125	0.0
1,2,3,7,8-PeCDD	106	105	0.9
1,2,3,4,7,8-HxCDF	128	130	1.6
1,2,3,6,7,8-HxCDF	126	124	1.6
2,3,4,6,7,8-HxCDF	117	115	1.7
1,2,3,7,8,9-HxCDF	116	117	0.9
1,2,3,4,7,8-HxCDD	120	120	0.0
1,2,3,6,7,8-HxCDD	129	126	2.4
1,2,3,7,8,9-HxCDD	125	121	3.3
1,2,3,4,6,7,8-HpCDF	117	112	4.4
1,2,3,4,7,8,9-HpCDF	104	103	1.0
1,2,3,4,6,7,8-HpCDD	102	99	3.0
OCDF	103	102	1.0
OCDD	116	118	1.7

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1022-CH (15cm)-MS		
Lab Sample ID	10281617001-MS		
Filename	U141002A_01	Matrix	Solid
Total Amount Extracted	25.2 g	Dilution	NA
ICAL ID	U140925	Extracted	09/25/2014 18:15
CCal Filename(s)	U141001B_21 & U141002A_19	Analyzed	10/01/2014 22:01
Method Blank ID	BLANK-42130	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.27	137	2,3,7,8-TCDF-13C	2.00	93
				2,3,7,8-TCDD-13C	2.00	110
				1,2,3,7,8-PeCDF-13C	2.00	89
2,3,7,8-TCDD	0.20	0.21	104	2,3,4,7,8-PeCDF-13C	2.00	81
				1,2,3,7,8-PeCDD-13C	2.00	95
				1,2,3,4,7,8-HxCDF-13C	2.00	103
1,2,3,7,8-PeCDF	1.00	1.10	110	1,2,3,6,7,8-HxCDF-13C	2.00	96
2,3,4,7,8-PeCDF	1.00	1.18	118	2,3,4,6,7,8-HxCDF-13C	2.00	100
				1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	104
1,2,3,7,8-PeCDD	1.00	1.06	106	1,2,3,6,7,8-HxCDD-13C	2.00	86
				1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	97
1,2,3,4,7,8-HxCDF	1.00	1.20	120	1,2,3,4,6,7,8-HpCDD-13C	2.00	100
1,2,3,6,7,8-HxCDF	1.00	1.12	112	OCDD-13C	4.00	86
2,3,4,6,7,8-HxCDF	1.00	1.14	114			
1,2,3,7,8,9-HxCDF	1.00	1.14	114	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.19	119	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,6,7,8-HxCDD	1.00	1.41	141			
1,2,3,7,8,9-HxCDD	1.00	1.25	125			
1,2,3,4,6,7,8-HpCDF	1.00	8.42	842			
1,2,3,4,7,8,9-HpCDF	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDD	1.00	3.66	366			
OCDF	2.00	6.15	308			
OCDD	2.00	25.60	1280			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1022-CH (15cm)-MSD		
Lab Sample ID	10281617001-MSD		
Filename	U141002A_02	Matrix	Solid
Total Amount Extracted	25.5 g	Dilution	NA
ICAL ID	U140925	Extracted	09/25/2014 18:15
CCal Filename(s)	U141001B_21 & U141002A_19	Analyzed	10/01/2014 22:40
Method Blank ID	BLANK-42130	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.27	134	2,3,7,8-TCDF-13C	2.00	90
				2,3,7,8-TCDD-13C	2.00	105
				1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	0.20	0.21	103	2,3,4,7,8-PeCDF-13C	2.00	79
				1,2,3,7,8-PeCDD-13C	2.00	89
				1,2,3,4,7,8-HxCDF-13C	2.00	103
1,2,3,7,8-PeCDF	1.00	1.10	110	1,2,3,6,7,8-HxCDF-13C	2.00	92
2,3,4,7,8-PeCDF	1.00	1.17	117	2,3,4,6,7,8-HxCDF-13C	2.00	97
				1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	105
1,2,3,7,8-PeCDD	1.00	1.04	104	1,2,3,6,7,8-HxCDD-13C	2.00	82
				1,2,3,4,6,7,8-HpCDF-13C	2.00	83
				1,2,3,4,7,8,9-HpCDF-13C	2.00	93
1,2,3,4,7,8-HxCDF	1.00	1.20	120	1,2,3,4,6,7,8-HpCDD-13C	2.00	100
1,2,3,6,7,8-HxCDF	1.00	1.12	112	OCDD-13C	4.00	86
2,3,4,6,7,8-HxCDF	1.00	1.16	116			
1,2,3,7,8,9-HxCDF	1.00	1.15	115	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.11	111	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	1.00	1.45	145			
1,2,3,7,8,9-HxCDD	1.00	1.20	120			
1,2,3,4,6,7,8-HpCDF	1.00	8.09	809			
1,2,3,4,7,8,9-HpCDF	1.00	1.16	116			
1,2,3,4,6,7,8-HpCDD	1.00	3.89	389			
OCDF	2.00	5.74	287			
OCDD	2.00	29.13	1457			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (100cm)-MS		
Lab Sample ID	10281617034-MS		
Filename	F141008A_15	Matrix	Solid
Total Amount Extracted	13.1 g	Dilution	NA
ICAL ID	F140918	Extracted	10/02/2014 19:30
CCal Filename(s)	F141008A_01 & F141008A_18	Analyzed	10/09/2014 00:27
Method Blank ID	BLANK-42200	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	109	2,3,7,8-TCDF-13C	2.00	78
				2,3,7,8-TCDD-13C	2.00	89
				1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	0.20	0.19	95	2,3,4,7,8-PeCDF-13C	2.00	53
				1,2,3,7,8-PeCDD-13C	2.00	75
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	1.00	1.09	109	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	1.00	1.08	108	2,3,4,6,7,8-HxCDF-13C	2.00	68
				1,2,3,7,8,9-HxCDF-13C	2.00	62
				1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	1.00	0.96	96	1,2,3,6,7,8-HxCDD-13C	2.00	66
				1,2,3,4,6,7,8-HpCDF-13C	2.00	64
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	1.00	1.07	107	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	1.00	1.05	105	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	1.00	1.01	101			
1,2,3,7,8,9-HxCDF	1.00	1.01	101	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.02	102	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	1.00	1.10	110			
1,2,3,7,8,9-HxCDD	1.00	0.99	99			
1,2,3,4,6,7,8-HpCDF	1.00	1.10	110			
1,2,3,4,7,8,9-HpCDF	1.00	0.97	97			
1,2,3,4,6,7,8-HpCDD	1.00	1.00	100			
OCDF	2.00	1.94	97			
OCDD	2.00	2.26	113			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (100cm)-MSD		
Lab Sample ID	10281617034-MSD		
Filename	F141008A_16	Matrix	Solid
Total Amount Extracted	13.3 g	Dilution	NA
ICAL ID	F140918	Extracted	10/02/2014 19:30
CCal Filename(s)	F141008A_01 & F141008A_18	Analyzed	10/09/2014 01:10
Method Blank ID	BLANK-42200	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	109	2,3,7,8-TCDF-13C	2.00	72
				2,3,7,8-TCDD-13C	2.00	83
				1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	0.20	0.19	95	2,3,4,7,8-PeCDF-13C	2.00	60
				1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	1.00	1.09	109	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	1.00	1.06	106	2,3,4,6,7,8-HxCDF-13C	2.00	69
				1,2,3,7,8,9-HxCDF-13C	2.00	65
				1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	1.00	0.95	95	1,2,3,6,7,8-HxCDD-13C	2.00	67
				1,2,3,4,6,7,8-HpCDF-13C	2.00	68
				1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	1.00	1.05	105	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	1.00	1.07	107	OCDD-13C	4.00	52
2,3,4,6,7,8-HxCDF	1.00	1.00	100			
1,2,3,7,8,9-HxCDF	1.00	1.02	102	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.02	102	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.00	1.10	110			
1,2,3,7,8,9-HxCDD	1.00	0.98	98			
1,2,3,4,6,7,8-HpCDF	1.00	1.09	109			
1,2,3,4,7,8,9-HpCDF	1.00	0.98	98			
1,2,3,4,6,7,8-HpCDD	1.00	0.99	99			
OCDF	2.00	1.94	97			
OCDD	2.00	2.23	112			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (200cm)-MS		
Lab Sample ID	10281617035-MS		
Filename	U141008A_06	Matrix	Solid
Total Amount Extracted	15.8 g	Dilution	NA
ICAL ID	U140925	Extracted	10/01/2014 19:20
CCal Filename(s)	U141008A_05 & U141008A_23	Analyzed	10/08/2014 16:35
Method Blank ID	BLANK-42179	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	119	2,3,7,8-TCDF-13C	2.00	72
				2,3,7,8-TCDD-13C	2.00	84
				1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	0.20	0.20	102	2,3,4,7,8-PeCDF-13C	2.00	59
				1,2,3,7,8-PeCDD-13C	2.00	60
				1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	1.00	1.18	118	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	1.00	1.10	110	2,3,4,6,7,8-HxCDF-13C	2.00	74
				1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	1.00	1.06	106	1,2,3,6,7,8-HxCDD-13C	2.00	70
				1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	1.00	1.18	118	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	1.00	1.16	116	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	1.00	1.12	112			
1,2,3,7,8,9-HxCDF	1.00	1.13	113	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.16	116	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	1.00	1.25	125			
1,2,3,7,8,9-HxCDD	1.00	1.08	108			
1,2,3,4,6,7,8-HpCDF	1.00	1.40	140			
1,2,3,4,7,8,9-HpCDF	1.00	1.09	109			
1,2,3,4,6,7,8-HpCDD	1.00	1.22	122			
OCDF	2.00	2.58	129			
OCDD	2.00	3.42	171			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1029-CH (200cm)-MSD		
Lab Sample ID	10281617035-MSD		
Filename	U141008A_07	Matrix	Solid
Total Amount Extracted	15.8 g	Dilution	NA
ICAL ID	U140925	Extracted	10/01/2014 19:20
CCal Filename(s)	U141008A_05 & U141008A_23	Analyzed	10/08/2014 17:13
Method Blank ID	BLANK-42179	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF-13C	2.00	69
				2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	0.20	0.19	97	2,3,4,7,8-PeCDF-13C	2.00	55
				1,2,3,7,8-PeCDD-13C	2.00	60
				1,2,3,4,7,8-HxCDF-13C	2.00	80
1,2,3,7,8-PeCDF	1.00	1.11	111	1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	1.00	1.13	113	2,3,4,6,7,8-HxCDF-13C	2.00	69
				1,2,3,7,8,9-HxCDF-13C	2.00	65
				1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	1.00	1.02	102	1,2,3,6,7,8-HxCDD-13C	2.00	61
				1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	1.00	1.15	115	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	1.00	1.12	112	OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	1.00	1.07	107			
1,2,3,7,8,9-HxCDF	1.00	1.09	109	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.05	105	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	1.00	1.33	133			
1,2,3,7,8,9-HxCDD	1.00	1.05	105			
1,2,3,4,6,7,8-HpCDF	1.00	1.21	121			
1,2,3,4,7,8,9-HpCDF	1.00	1.10	110			
1,2,3,4,6,7,8-HpCDD	1.00	1.10	110			
OCDF	2.00	2.36	118			
OCDD	2.00	2.82	141			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1042-CH (50cm)-MS		
Lab Sample ID	10281617037-MS		
Filename	F140930B_20	Matrix	Solid
Total Amount Extracted	16.1 g	Dilution	NA
ICAL ID	F140918	Extracted	09/27/2014 13:45
CCal Filename(s)	F140930B_06 & F140930B_23	Analyzed	09/30/2014 23:03
Method Blank ID	BLANK-42150	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	113	2,3,7,8-TCDF-13C	2.00	84
				2,3,7,8-TCDD-13C	2.00	95
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	0.20	0.19	95	2,3,4,7,8-PeCDF-13C	2.00	63
				1,2,3,7,8-PeCDD-13C	2.00	72
				1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	1.00	1.08	108	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	1.00	1.10	110	2,3,4,6,7,8-HxCDF-13C	2.00	84
				1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	92
1,2,3,7,8-PeCDD	1.00	0.93	93	1,2,3,6,7,8-HxCDD-13C	2.00	70
				1,2,3,4,6,7,8-HpCDF-13C	2.00	83
				1,2,3,4,7,8,9-HpCDF-13C	2.00	80
1,2,3,4,7,8-HxCDF	1.00	1.08	108	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	1.00	1.08	108	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	1.00	1.01	101			
1,2,3,7,8,9-HxCDF	1.00	1.03	103	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.06	106	2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,6,7,8-HxCDD	1.00	1.11	111			
1,2,3,7,8,9-HxCDD	1.00	1.07	107			
1,2,3,4,6,7,8-HpCDF	1.00	1.22	122			
1,2,3,4,7,8,9-HpCDF	1.00	0.97	97			
1,2,3,4,6,7,8-HpCDD	1.00	1.16	116			
OCDF	2.00	2.14	107			
OCDD	2.00	3.29	165			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1042-CH (50cm)-MSD		
Lab Sample ID	10281617037-MSD		
Filename	F140930B_21	Matrix	Solid
Total Amount Extracted	15.8 g	Dilution	NA
ICAL ID	F140918	Extracted	09/27/2014 13:45
CCal Filename(s)	F140930B_06 & F140930B_23	Analyzed	09/30/2014 23:46
Method Blank ID	BLANK-42150	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	114	2,3,7,8-TCDF-13C	2.00	80
				2,3,7,8-TCDD-13C	2.00	91
				1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.00	62
				1,2,3,7,8-PeCDD-13C	2.00	71
				1,2,3,4,7,8-HxCDF-13C	2.00	84
1,2,3,7,8-PeCDF	1.00	1.10	110	1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	1.00	1.08	108	2,3,4,6,7,8-HxCDF-13C	2.00	80
				1,2,3,7,8,9-HxCDF-13C	2.00	78
				1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	1.00	0.93	93	1,2,3,6,7,8-HxCDD-13C	2.00	66
				1,2,3,4,6,7,8-HpCDF-13C	2.00	78
				1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	1.00	1.11	111	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	1.00	1.08	108	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	1.00	1.02	102			
1,2,3,7,8,9-HxCDF	1.00	1.04	104	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.98	98	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	1.00	1.18	118			
1,2,3,7,8,9-HxCDD	1.00	1.05	105			
1,2,3,4,6,7,8-HpCDF	1.00	1.18	118			
1,2,3,4,7,8,9-HpCDF	1.00	0.95	95			
1,2,3,4,6,7,8-HpCDD	1.00	1.09	109			
OCDF	2.00	2.15	108			
OCDD	2.00	2.87	143			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1011-CH (50cm)-MS		
Lab Sample ID	10281617067-MS		
Filename	F141010A_16	Matrix	Solid
Total Amount Extracted	14.5 g	Dilution	NA
ICAL ID	F141016	Extracted	10/03/2014 19:30
CCal Filename(s)	F141010A_01 & F141010A_18	Analyzed	10/10/2014 19:31
Method Blank ID	BLANK-42210	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	113	2,3,7,8-TCDF-13C	2.00	58
				2,3,7,8-TCDD-13C	2.00	68
				1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	0.20	0.18	88	2,3,4,7,8-PeCDF-13C	2.00	48
				1,2,3,7,8-PeCDD-13C	2.00	52
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	1.00	1.19	119	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	1.00	1.22	122	2,3,4,6,7,8-HxCDF-13C	2.00	64
				1,2,3,7,8,9-HxCDF-13C	2.00	58
				1,2,3,4,7,8-HxCDD-13C	2.00	51
1,2,3,7,8-PeCDD	1.00	1.02	102	1,2,3,6,7,8-HxCDD-13C	2.00	55
				1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	1.00	1.26	126	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	1.00	1.18	118	OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	1.00	1.12	112			
1,2,3,7,8,9-HxCDF	1.00	1.14	114	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.17	117	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,6,7,8-HxCDD	1.00	1.22	122			
1,2,3,7,8,9-HxCDD	1.00	1.22	122			
1,2,3,4,6,7,8-HpCDF	1.00	1.19	119			
1,2,3,4,7,8,9-HpCDF	1.00	1.01	101			
1,2,3,4,6,7,8-HpCDD	1.00	0.98	98			
OCDF	2.00	2.21	111			
OCDD	2.00	2.41	121			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1011-CH (50cm)-MSD		
Lab Sample ID	10281617067-MSD		
Filename	F141010A_17	Matrix	Solid
Total Amount Extracted	14.3 g	Dilution	NA
ICAL ID	F141016	Extracted	10/03/2014 19:30
CCal Filename(s)	F141010A_01 & F141010A_18	Analyzed	10/10/2014 20:14
Method Blank ID	BLANK-42210	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	113	2,3,7,8-TCDF-13C	2.00	84
				2,3,7,8-TCDD-13C	2.00	102
				1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	0.20	0.17	87	2,3,4,7,8-PeCDF-13C	2.00	74
				1,2,3,7,8-PeCDD-13C	2.00	82
				1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	1.00	1.19	119	1,2,3,6,7,8-HxCDF-13C	2.00	96
2,3,4,7,8-PeCDF	1.00	1.27	127	2,3,4,6,7,8-HxCDF-13C	2.00	92
				1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	1.00	0.99	99	1,2,3,6,7,8-HxCDD-13C	2.00	82
				1,2,3,4,6,7,8-HpCDF-13C	2.00	87
				1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	1.00	1.21	121	1,2,3,4,6,7,8-HpCDD-13C	2.00	97
1,2,3,6,7,8-HxCDF	1.00	1.18	118	OCDD-13C	4.00	69
2,3,4,6,7,8-HxCDF	1.00	1.15	115			
1,2,3,7,8,9-HxCDF	1.00	1.11	111	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.19	119	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	1.00	1.25	125			
1,2,3,7,8,9-HxCDD	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDF	1.00	1.18	118			
1,2,3,4,7,8,9-HpCDF	1.00	1.02	102			
1,2,3,4,6,7,8-HpCDD	1.00	0.97	97			
OCDF	2.00	2.15	107			
OCDD	2.00	2.30	115			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1037-CH (15cm)-MS		
Lab Sample ID	10281617075-MS		
Filename	U141017C_16	Matrix	Solid
Total Amount Extracted	13.6 g	Dilution	NA
ICAL ID	U141013	Extracted	10/14/2014 19:30
CCal Filename(s)	U141017B_10 & U141017C_19	Analyzed	10/18/2014 01:39
Method Blank ID	BLANK-42342	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	101	2,3,7,8-TCDF-13C	2.00	64
				2,3,7,8-TCDD-13C	2.00	83
				1,2,3,7,8-PeCDF-13C	2.00	54
2,3,7,8-TCDD	0.20	0.17	84	2,3,4,7,8-PeCDF-13C	2.00	47
				1,2,3,7,8-PeCDD-13C	2.00	61
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	1.00	0.98	98	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	1.00	0.96	96	2,3,4,6,7,8-HxCDF-13C	2.00	61
				1,2,3,7,8,9-HxCDF-13C	2.00	56
				1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	1.00	0.84	84	1,2,3,6,7,8-HxCDD-13C	2.00	67
				1,2,3,4,6,7,8-HpCDF-13C	2.00	54
				1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	1.00	0.97	97	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	1.00	1.00	100	OCDD-13C	4.00	36 R
2,3,4,6,7,8-HxCDF	1.00	0.92	92			
1,2,3,7,8,9-HxCDF	1.00	0.92	92	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.96	96	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	1.00	0.98	98			
1,2,3,7,8,9-HxCDD	1.00	0.93	93			
1,2,3,4,6,7,8-HpCDF	1.00	1.06	106			
1,2,3,4,7,8,9-HpCDF	1.00	1.04	104			
1,2,3,4,6,7,8-HpCDD	1.00	0.98	98			
OCDF	2.00	1.87	94			
OCDD	2.00	3.67	183			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Stantec Consulting Services Inc.

Client's Sample ID	SS 1037-CH (15cm)-MSD		
Lab Sample ID	10281617075-MSD		
Filename	U141017C_17	Matrix	Solid
Total Amount Extracted	13.3 g	Dilution	NA
ICAL ID	U141013	Extracted	10/14/2014 19:30
CCal Filename(s)	U141017B_10 & U141017C_19	Analyzed	10/18/2014 02:18
Method Blank ID	BLANK-42342	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C	2.00	66
				2,3,7,8-TCDD-13C	2.00	82
				1,2,3,7,8-PeCDF-13C	2.00	55
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	49
				1,2,3,7,8-PeCDD-13C	2.00	62
				1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	1.00	0.97	97	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	1.00	0.95	95	2,3,4,6,7,8-HxCDF-13C	2.00	66
				1,2,3,7,8,9-HxCDF-13C	2.00	61
				1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	1.00	0.86	86	1,2,3,6,7,8-HxCDD-13C	2.00	70
				1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	1.00	0.97	97	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	1.00	0.96	96	OCDD-13C	4.00	39 R
2,3,4,6,7,8-HxCDF	1.00	0.93	93			
1,2,3,7,8,9-HxCDF	1.00	0.97	97	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.87	87	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	1.00	1.08	108			
1,2,3,7,8,9-HxCDD	1.00	0.90	90			
1,2,3,4,6,7,8-HpCDF	1.00	1.11	111			
1,2,3,4,7,8,9-HpCDF	1.00	1.01	101			
1,2,3,4,6,7,8-HpCDD	1.00	1.01	101			
OCDF	2.00	1.85	93			
OCDD	2.00	3.97	198			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1022-CH (15cm)				Dry Weights	
Lab Sample ID	10281617001	Sample Filename	U141002A_08		Sample Amount	11.8 g
MS ID	10281617001-MS	MS Filename	U141002A_01		MS Amount	11.8 g
MSD ID	10281617001-MSD	MSD Filename	U141002A_02		MSD Amount	12.0 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	3.573	0.20	0.27	0.27	2.2	116	113	2.8
2,3,7,8-TCDD	1.576	0.20	0.21	0.21	1.1	95	94	1.3
1,2,3,7,8-PeCDF	0.000	1.00	1.10	1.10	0.6	109	109	0.6
2,3,4,7,8-PeCDF	3.584	1.00	1.18	1.17	0.7	114	113	0.7
1,2,3,7,8-PeCDD	3.281	1.00	1.06	1.04	2.4	102	100	2.5
1,2,3,4,7,8-HxCDF	9.002	1.00	1.20	1.20	0.1	109	109	0.0
1,2,3,6,7,8-HxCDF	8.158	1.00	1.12	1.12	0.2	102	102	0.2
2,3,4,6,7,8-HxCDF	3.863	1.00	1.14	1.16	1.6	109	111	1.6
1,2,3,7,8,9-HxCDF	0.000	1.00	1.14	1.15	0.8	113	114	0.8
1,2,3,4,7,8-HxCDD	4.145	1.00	1.19	1.11	7.6	114	106	8.0
1,2,3,6,7,8-HxCDD	18.199	1.00	1.41	1.45	2.2	120	123	2.4
1,2,3,7,8,9-HxCDD	10.346	1.00	1.25	1.20	3.9	113	108	4.4
1,2,3,4,6,7,8-HpCDF	538.498	1.00	8.42	8.09	4.0	205	165	21.9
1,2,3,4,7,8,9-HpCDF	4.435	1.00	1.18	1.16	1.5	113	111	1.6
1,2,3,4,6,7,8-HpCDD	273.247	1.00	3.66	3.89	6.0	43	62	35.7
OCDF	318.630	2.00	6.15	5.74	6.8	119	97	20.9
OCDD	2766.335	2.00	25.60	29.13	12.9	0	0	0.0

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1029-CH (100cm)			Dry Weights	
Lab Sample ID	10281617034	Sample Filename	F141008A_11	Sample Amount	10.6 g
MS ID	10281617034-MS	MS Filename	F141008A_15	MS Amount	10.2 g
MSD ID	10281617034-MSD	MSD Filename	F141008A_16	MSD Amount	10.3 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.058	0.20	0.22	0.22	0.3	108	109	0.3
2,3,7,8-TCDD	0.000	0.20	0.19	0.19	0.5	95	95	0.5
1,2,3,7,8-PeCDF	0.000	1.00	1.09	1.09	0.3	109	109	0.3
2,3,4,7,8-PeCDF	0.000	1.00	1.08	1.06	1.8	108	106	1.8
1,2,3,7,8-PeCDD	0.000	1.00	0.96	0.95	1.5	96	95	1.5
1,2,3,4,7,8-HxCDF	0.000	1.00	1.07	1.05	1.7	107	105	1.7
1,2,3,6,7,8-HxCDF	0.000	1.00	1.05	1.07	2.5	104	107	2.5
2,3,4,6,7,8-HxCDF	0.000	1.00	1.01	1.00	1.4	101	100	1.4
1,2,3,7,8,9-HxCDF	0.000	1.00	1.01	1.02	0.7	101	102	0.7
1,2,3,4,7,8-HxCDD	0.000	1.00	1.02	1.02	0.4	102	102	0.4
1,2,3,6,7,8-HxCDD	0.000	1.00	1.10	1.10	0.4	110	110	0.4
1,2,3,7,8,9-HxCDD	0.000	1.00	0.99	0.98	0.6	99	98	0.6
1,2,3,4,6,7,8-HpCDF	1.341	1.00	1.10	1.09	0.8	109	108	0.9
1,2,3,4,7,8,9-HpCDF	0.000	1.00	0.97	0.98	0.6	97	98	0.6
1,2,3,4,6,7,8-HpCDD	0.000	1.00	1.00	0.99	1.0	100	99	1.0
OCDF	0.661	2.00	1.94	1.94	0.0	97	97	0.0
OCDD	3.923	2.00	2.26	2.23	1.3	111	110	1.4

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1029-CH (200cm)			Dry Weights	
Lab Sample ID	10281617035	Sample Filename	U141009A_07	Sample Amount	12.3 g
MS ID	10281617035-MS	MS Filename	U141008A_06	MS Amount	12.2 g
MSD ID	10281617035-MSD	MSD Filename	U141008A_07	MSD Amount	12.2 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.24	0.23	2.3	118	115	2.3
2,3,7,8-TCDD	0.000	0.20	0.20	0.19	5.2	102	97	5.2
1,2,3,7,8-PeCDF	0.000	1.00	1.18	1.11	5.4	118	111	5.4
2,3,4,7,8-PeCDF	0.217	1.00	1.10	1.13	3.4	109	113	3.4
1,2,3,7,8-PeCDD	0.000	1.00	1.06	1.02	3.4	106	102	3.4
1,2,3,4,7,8-HxCDF	0.000	1.00	1.18	1.15	2.5	118	115	2.5
1,2,3,6,7,8-HxCDF	0.198	1.00	1.16	1.12	2.9	115	112	2.9
2,3,4,6,7,8-HxCDF	0.239	1.00	1.12	1.07	4.2	111	107	4.2
1,2,3,7,8,9-HxCDF	0.000	1.00	1.13	1.09	3.8	113	109	3.8
1,2,3,4,7,8-HxCDD	0.000	1.00	1.16	1.05	10.0	116	105	10.0
1,2,3,6,7,8-HxCDD	0.000	1.00	1.25	1.33	6.6	125	133	6.6
1,2,3,7,8,9-HxCDD	0.267	1.00	1.08	1.05	3.2	108	104	3.2
1,2,3,4,6,7,8-HpCDF	3.852	1.00	1.40	1.21	14.8	135	116	15.4
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.09	1.10	1.1	109	110	1.1
1,2,3,4,6,7,8-HpCDD	4.818	1.00	1.22	1.10	10.3	116	104	10.9
OCDF	0.000	2.00	2.58	2.36	9.0	127	115	9.2
OCDD	45.968	2.00	3.42	2.82	19.4	143	113	23.7

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1042-CH (50cm)			Dry Weights	
Lab Sample ID	10281617037	Sample Filename	F140930B_17	Sample Amount	12.8 g
MS ID	10281617037-MS	MS Filename	F140930B_20	MS Amount	12.8 g
MSD ID	10281617037-MSD	MSD Filename	F140930B_21	MSD Amount	12.6 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.289	0.20	0.23	0.23	0.9	111	112	0.9
2,3,7,8-TCDD	0.097	0.20	0.19	0.19	2.7	95	92	2.7
1,2,3,7,8-PeCDF	0.000	1.00	1.08	1.10	1.5	108	110	1.5
2,3,4,7,8-PeCDF	0.300	1.00	1.10	1.08	1.7	110	108	1.7
1,2,3,7,8-PeCDD	0.000	1.00	0.93	0.93	0.0	93	93	0.0
1,2,3,4,7,8-HxCDF	0.000	1.00	1.08	1.11	2.3	108	111	2.3
1,2,3,6,7,8-HxCDF	0.521	1.00	1.08	1.08	0.5	108	107	0.5
2,3,4,6,7,8-HxCDF	0.369	1.00	1.01	1.02	0.5	101	101	0.5
1,2,3,7,8,9-HxCDF	0.000	1.00	1.03	1.04	1.4	103	104	1.4
1,2,3,4,7,8-HxCDD	0.200	1.00	1.06	0.98	7.5	105	98	7.6
1,2,3,6,7,8-HxCDD	0.587	1.00	1.11	1.18	6.6	110	117	6.7
1,2,3,7,8,9-HxCDD	0.290	1.00	1.07	1.05	2.0	107	105	2.0
1,2,3,4,6,7,8-HpCDF	9.593	1.00	1.22	1.18	2.9	110	106	3.0
1,2,3,4,7,8,9-HpCDF	0.151	1.00	0.97	0.95	1.4	96	95	1.4
1,2,3,4,6,7,8-HpCDD	10.179	1.00	1.16	1.09	7.0	103	96	7.7
OCDF	6.078	2.00	2.14	2.15	0.8	103	104	0.9
OCDD	77.160	2.00	3.29	2.87	13.9	115	95	19.5

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1011-CH (50cm)				Dry Weights	
Lab Sample ID	10281617067	Sample Filename	F141010A_09		Sample Amount	11.1 g
MS ID	10281617067-MS	MS Filename	F141010A_16		MS Amount	11.1 g
MSD ID	10281617067-MSD	MSD Filename	F141010A_17		MSD Amount	10.9 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.23	0.23	0.2	113	113	0.2
2,3,7,8-TCDD	0.000	0.20	0.18	0.17	1.7	88	87	1.7
1,2,3,7,8-PeCDF	0.000	1.00	1.19	1.19	0.4	119	119	0.4
2,3,4,7,8-PeCDF	0.000	1.00	1.22	1.27	3.4	122	127	3.4
1,2,3,7,8-PeCDD	0.000	1.00	1.02	0.99	2.5	102	99	2.5
1,2,3,4,7,8-HxCDF	0.000	1.00	1.26	1.21	4.0	126	121	4.0
1,2,3,6,7,8-HxCDF	0.000	1.00	1.18	1.18	0.2	118	118	0.2
2,3,4,6,7,8-HxCDF	0.000	1.00	1.12	1.15	2.5	112	115	2.5
1,2,3,7,8,9-HxCDF	0.000	1.00	1.14	1.11	2.4	114	111	2.4
1,2,3,4,7,8-HxCDD	0.000	1.00	1.17	1.19	1.3	117	119	1.3
1,2,3,6,7,8-HxCDD	0.000	1.00	1.22	1.25	2.9	122	125	2.9
1,2,3,7,8,9-HxCDD	0.000	1.00	1.22	1.18	3.3	122	118	3.3
1,2,3,4,6,7,8-HpCDF	8.157	1.00	1.19	1.18	0.3	110	109	0.2
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.01	1.02	0.4	101	102	0.4
1,2,3,4,6,7,8-HpCDD	1.395	1.00	0.98	0.97	1.2	96	95	1.2
OCDF	3.919	2.00	2.21	2.15	3.0	109	105	3.0
OCDD	11.745	2.00	2.41	2.30	4.7	114	109	4.9

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Stantec Consulting Services Inc.

Client Sample ID	SS 1037-CH (15cm)			Dry Weights	
Lab Sample ID	10281617075	Sample Filename	U141017C_15	Sample Amount	12.4 g
MS ID	10281617075-MS	MS Filename	U141017C_16	MS Amount	12.4 g
MSD ID	10281617075-MSD	MSD Filename	U141017C_17	MSD Amount	12.1 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.20	0.20	0.8	101	100	0.8
2,3,7,8-TCDD	0.000	0.20	0.17	0.18	7.3	84	91	7.3
1,2,3,7,8-PeCDF	0.000	1.00	0.98	0.97	1.0	98	97	1.0
2,3,4,7,8-PeCDF	0.381	1.00	0.96	0.95	1.0	96	95	1.0
1,2,3,7,8-PeCDD	0.000	1.00	0.84	0.86	1.5	84	86	1.5
1,2,3,4,7,8-HxCDF	0.000	1.00	0.97	0.97	0.6	97	97	0.6
1,2,3,6,7,8-HxCDF	0.000	1.00	1.00	0.96	4.1	100	96	4.1
2,3,4,6,7,8-HxCDF	0.000	1.00	0.92	0.93	1.5	92	93	1.5
1,2,3,7,8,9-HxCDF	0.000	1.00	0.92	0.97	4.7	92	97	4.7
1,2,3,4,7,8-HxCDD	0.000	1.00	0.96	0.87	10.4	96	86	10.5
1,2,3,6,7,8-HxCDD	0.000	1.00	0.98	1.08	9.5	97	107	9.6
1,2,3,7,8,9-HxCDD	0.000	1.00	0.93	0.90	3.6	93	89	3.6
1,2,3,4,6,7,8-HpCDF	5.625	1.00	1.06	1.11	4.4	99	104	4.8
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.04	1.01	3.1	104	101	3.1
1,2,3,4,6,7,8-HpCDD	20.871	1.00	0.98	1.01	2.9	72	76	4.7
OCDF	14.724	2.00	1.87	1.85	1.1	85	84	0.9
OCDD	263.731	2.00	3.67	3.97	7.8	20	39	62.0

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

October 15, 2014

Dave Constant
Stantec Consulting Services Inc.
2335 Hwy 36 W
Saint Paul, MN 55113

RE: Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Dear Dave Constant:
Enclosed are the analytical results for sample(s) received by the laboratory between September 16, 2014 and October 01, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kabor Xiong

Kabor Xiong
kabor.xiong@pacelabs.com
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #:17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012
Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10281597001	**SS 1022-CH (15cm)**	Solid	09/16/14 08:30	09/16/14 18:22
10281597002	**SS 1022-CH (50cm)**	Solid	09/16/14 08:40	09/16/14 18:22
10281597003	**SS 1022-CH (100cm)**	Solid	09/16/14 08:50	09/16/14 18:22
10281597004	**SS 1023-CH (15cm)**	Solid	09/16/14 09:30	09/16/14 18:22
10281597005	**SS 1023-CH (50cm)**	Solid	09/16/14 09:40	09/16/14 18:22
10281597006	**SS 1024-CH (15cm)**	Solid	09/16/14 10:15	09/16/14 18:22
10281597007	**SS 1024-CH (50cm)**	Solid	09/16/14 10:25	09/16/14 18:22
10281597008	**SS 1024-CH (100cm)**	Solid	09/16/14 10:35	09/16/14 18:22
10281597009	**SS 1025-CH (15cm)**	Solid	09/16/14 11:20	09/16/14 18:22
10281597010	**SS 1025-CH (50cm)**	Solid	09/16/14 11:30	09/16/14 18:22
10281597011	**SS 1025-CH (100cm)**	Solid	09/16/14 11:40	09/16/14 18:22
10281597012	**DUP-01-CH**	Solid	09/16/14 00:00	09/16/14 18:22
10281597013	**SS 1032-CH (15cm)**	Solid	09/15/14 15:45	09/16/14 18:22
10281597014	**SS 1032-CH (50cm)**	Solid	09/15/14 16:10	09/16/14 18:22
10281597015	**SS 1032-CH (100cm)**	Solid	09/15/14 16:15	09/16/14 18:22
10281597016	**SS 1030-CH (15cm)**	Solid	09/15/14 17:00	09/16/14 18:22
10281597017	**SS 1030-CH (50cm)**	Solid	09/15/14 17:10	09/16/14 18:22
10281597018	**SS 1021-CH (15cm)**	Solid	09/15/14 17:45	09/16/14 18:22
10281597019	**SS 1021-CH (50cm)**	Solid	09/15/14 17:55	09/16/14 18:22
10281597020	**SS 1021-CH (100cm)**	Solid	09/15/14 18:00	09/16/14 18:22
10281597021	**EB-01-CH**	Water	09/15/14 18:30	09/16/14 18:22
10281597022	**SS 1026-CH (15cm)**	Solid	09/16/14 14:20	09/17/14 18:27
10281597023	**SS 1026-CH (50cm)**	Solid	09/16/14 14:30	09/17/14 18:27
10281597024	**SS 1026-CH (100cm)**	Solid	09/16/14 14:40	09/17/14 18:27
10281597025	**SS 1028-CH (15cm)**	Solid	09/16/14 15:10	09/17/14 18:27
10281597026	**SS 1028-CH (50cm)**	Solid	09/16/14 15:15	09/17/14 18:27
10281597027	**SS 1028-CH (100cm)**	Solid	09/16/14 15:20	09/17/14 18:27
10281597028	**SS 1028-CH (200cm)**	Solid	09/16/14 15:25	09/17/14 18:27
10281597029	**SS 1027-CH (15cm)**	Solid	09/16/14 16:20	09/17/14 18:27
10281597030	**SS 1027-CH (50cm)**	Solid	09/16/14 16:25	09/17/14 18:27
10281597031	**SS 1027-CH (100cm)**	Solid	09/16/14 16:30	09/17/14 18:27
10281597032	**SS 1027-CH (200cm)**	Solid	09/16/14 16:35	09/17/14 18:27
10281597033	**EB-02-CH**	Water	09/16/14 17:00	09/17/14 18:27
10281597034	**SS 1029-CH (15cm)**	Solid	09/17/14 08:20	09/17/14 18:27
10281597035	**SS 1029-CH (50cm)**	Solid	09/17/14 08:25	09/17/14 18:27
10281597036	**SS 1029-CH (100cm)**	Solid	09/17/14 08:30	09/17/14 18:27
10281597037	**SS 1029-CH (200cm)**	Solid	09/17/14 08:35	09/17/14 18:27

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10281597038	**SS 1042-CH (15cm)**	Solid	09/17/14 09:25	09/17/14 18:27
10281597039	**SS 1042-CH (50cm)**	Solid	09/17/14 09:30	09/17/14 18:27
10281597040	**SS 1010-CH (15cm)**	Solid	09/17/14 00:00	09/17/14 18:27
10281597041	**SS 1010-CH (50cm)**	Solid	09/17/14 00:00	09/17/14 18:27
10281597042	**SS 1010-CH (100cm)**	Solid	09/17/14 00:00	09/17/14 18:27
10281597043	**SS 1001-CH (15cm)**	Solid	09/17/14 11:50	09/17/14 18:27
10281597044	**SS 1001-CH (50cm)**	Solid	09/17/14 11:55	09/17/14 18:27
10281597045	**SS1033-CH (15cm)**	Solid	09/18/14 08:40	09/18/14 18:48
10281597046	**SS1033-CH (50cm)**	Solid	09/18/14 08:45	09/18/14 18:48
10281597047	**SS1033-CH (100cm)**	Solid	09/18/14 08:50	09/18/14 18:48
10281597048	**SS1034-CH (15cm)**	Solid	09/18/14 09:25	09/18/14 18:48
10281597049	**SS1034-CH (50cm)**	Solid	09/18/14 09:30	09/18/14 18:48
10281597050	**SS1034-CH (100cm)**	Solid	09/18/14 09:35	09/18/14 18:48
10281597051	**SS1031-CH (15cm)**	Solid	09/18/14 10:05	09/18/14 18:48
10281597052	**SS1031-CH (50cm)**	Solid	09/18/14 10:10	09/18/14 18:48
10281597053	**SS1031-CH (100cm)**	Solid	09/18/14 10:15	09/18/14 18:48
10281597054	**SS1041-CH (15cm)**	Solid	09/18/14 08:25	09/19/14 18:45
10281597055	**SS1041-CH (50cm)**	Solid	09/18/14 08:30	09/19/14 18:45
10281597056	**NSW1041-CH**	Water	09/19/14 09:25	09/19/14 18:45
10281597057	**SS1004-CH (15cm)**	Solid	09/19/14 10:45	09/19/14 18:45
10281597058	**SS1004-CH (50cm)**	Solid	09/19/14 10:50	09/19/14 18:45
10281597059	**NSW1004-CH**	Water	09/19/14 11:15	09/19/14 18:45
10281597060	**SS1012-CH (15cm)**	Solid	09/19/14 11:35	09/19/14 18:45
10281597061	**SS1012-CH (50cm)**	Solid	09/19/14 11:40	09/19/14 18:45
10281597062	**NSW1012-CH**	Water	09/19/14 12:25	09/19/14 18:45
10281597063	**NSW1016-CH**	Water	09/19/14 12:50	09/19/14 18:45
10281597064	**DUP-02-CH**	Water	09/19/14 00:00	09/19/14 18:45
10281597065	**EB-03-CH**	Water	09/19/14 14:30	09/19/14 18:45
10281597066	**SS1017-CH (15CM)**	Solid	09/18/14 13:45	09/19/14 18:45
10281597067	**SS1017-CH (50CM)**	Solid	09/18/14 13:50	09/19/14 18:45
10281597068	**SS1011-CH (15CM)**	Solid	09/18/14 14:25	09/19/14 18:45
10281597069	**SS1011-CH (50CM)**	Solid	09/18/14 14:30	09/19/14 18:45
10281597070	**SS1011-CH (100CM)**	Solid	09/18/14 14:35	09/19/14 18:45
10281597071	**SS1009-CH (15CM)**	Solid	09/18/14 14:50	09/19/14 18:45
10281597072	**SS1009-CH (50CM)**	Solid	09/18/14 14:55	09/19/14 18:45
10281597073	**SS1005-CH (15CM)**	Solid	09/18/14 15:25	09/19/14 18:45
10281597074	**SS1005-CH (50CM)**	Solid	09/18/14 15:30	09/19/14 18:45

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10281597075	**SS1002-CH (15CM)**	Solid	09/18/14 16:05	09/19/14 18:45
10281597076	**SS1002-CH (50CM)**	Solid	09/18/14 16:10	09/19/14 18:45
10281597077	**SS1037-CH (15cm)**	Solid	10/01/14 07:50	10/01/14 13:35
10281597078	**SS1037-CH (50cm)**	Solid	10/01/14 07:55	10/01/14 13:35
10281597079	**SS1037-CH (100cm)**	Solid	10/01/14 08:00	10/01/14 13:35
10281597080	**SS1035-CH (15cm)**	Solid	10/01/14 09:20	10/01/14 13:35
10281597081	**SS1035-CH (50cm)**	Solid	10/01/14 09:25	10/01/14 13:35
10281597082	**SS1035-CH (100cm)**	Solid	10/01/14 09:30	10/01/14 13:35
10281597083	**DUP-03-CH**	Solid	10/01/14 00:00	10/01/14 13:35
10281597084	**EB-04-CH**	Water	10/01/14 10:30	10/01/14 13:35

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10281597001	**SS 1022-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597002	**SS 1022-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597003	**SS 1022-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597004	**SS 1023-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597005	**SS 1023-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597006	**SS 1024-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597007	**SS 1024-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597008	**SS 1024-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597009	**SS 1025-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597010	**SS 1025-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597011	**SS 1025-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597012	**DUP-01-CH**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597013	**SS 1032-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597014	**SS 1032-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597015	**SS 1032-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8270 by SIM	LT	25	PASI-M
10281597016	**SS 1030-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597017	**SS 1030-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597018	**SS 1021-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597019	**SS 1021-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597020	**SS 1021-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	AMP	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597021	**EB-01-CH**	EPA 8270 by SIM	AS1	18	PASI-M
10281597022	**SS 1026-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597023	**SS 1026-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10281597024	**SS 1026-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597025	**SS 1028-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597026	**SS 1028-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597027	**SS 1028-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597028	**SS 1028-CH (200cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597029	**SS 1027-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597030	**SS 1027-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597031	**SS 1027-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597032	**SS 1027-CH (200cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597033	**EB-02-CH**	EPA 8270 by SIM	LT	18	PASI-M
10281597034	**SS 1029-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597035	**SS 1029-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597036	**SS 1029-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597037	**SS 1029-CH (200cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597038	**SS 1042-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597039	**SS 1042-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597040	**SS 1010-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597041	**SS 1010-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597042	**SS 1010-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597043	**SS 1001-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597044	**SS 1001-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597045	**SS1033-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597046	**SS1033-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10281597047	**SS1033-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597048	**SS1034-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597049	**SS1034-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597050	**SS1034-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597051	**SS1031-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597052	**SS1031-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597053	**SS1031-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597054	**SS1041-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597055	**SS1041-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597056	**NSW1041-CH**	SM 4500-S2-D	JME	1	PASI-MT
		EPA 350.1	PH1	1	PASI-M
10281597057	**SS1004-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597058	**SS1004-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597059	**NSW1004-CH**	SM 4500-S2-D	JME	1	PASI-MT
		EPA 350.1	PH1	1	PASI-M
10281597060	**SS1012-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597061	**SS1012-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597062	**NSW1012-CH**	SM 4500-S2-D	JME	1	PASI-MT
		EPA 350.1	PH1	1	PASI-M
10281597063	**NSW1016-CH**	SM 4500-S2-D	JME	1	PASI-MT
		EPA 350.1	PH1	1	PASI-M
10281597064	**DUP-02-CH**	SM 4500-S2-D	JME	1	PASI-MT

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 350.1	PH1	1	PASI-M
10281597065	**EB-03-CH**	EPA 8270 by SIM	LT	18	PASI-M
10281597066	**SS1017-CH (15CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597067	**SS1017-CH (50CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597068	**SS1011-CH (15CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597069	**SS1011-CH (50CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597070	**SS1011-CH (100CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597071	**SS1009-CH (15CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597072	**SS1009-CH (50CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10281597073	**SS1005-CH (15CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597074	**SS1005-CH (50CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597075	**SS1002-CH (15CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597076	**SS1002-CH (50CM)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	BD1	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	AS1	25	PASI-M
10281597077	**SS1037-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597078	**SS1037-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597079	**SS1037-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597080	**SS1035-CH (15cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597081	**SS1035-CH (50cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597082	**SS1035-CH (100cm)**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597083	**DUP-03-CH**	EPA 8082	KL1	11	PASI-M
		EPA 6010C	IP	7	PASI-M
		EPA 7471B	DM	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	LT	25	PASI-M
10281597084	**EB-04-CH**	EPA 8270 by SIM	LT	18	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (15cm) **Lab ID: 10281597001** Collected: 09/16/14 08:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	12674-11-2	M0
PCB-1221 (Aroclor 1221)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	70.2	1	10/02/14 12:45	10/03/14 17:31	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/02/14 12:45	10/03/14 17:31	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/02/14 12:45	10/03/14 17:31	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.4**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:11	7440-38-2	
Cadmium	**0.59**	mg/kg	0.27	1	09/27/14 14:07	10/05/14 04:11	7440-43-9	
Chromium	**22.6**	mg/kg	0.90	1	09/27/14 14:07	10/05/14 04:11	7440-47-3	
Copper	**22.8**	mg/kg	0.90	1	09/27/14 14:07	10/05/14 04:11	7440-50-8	
Lead	**27.5**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:11	7439-92-1	
Nickel	**19.0**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:11	7440-02-0	
Zinc	**117**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:11	7440-66-6	M1
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.20**	mg/kg	0.040	1	09/29/14 14:02	09/30/14 14:32	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**53.1**	%	0.10	1		09/25/14 14:04		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	83-32-9	
Acenaphthylene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	208-96-8	
Anthracene	**24.8**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	120-12-7	
Benzo(a)anthracene	**89.6**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	56-55-3	R1
Benzo(a)pyrene	**105**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	50-32-8	M1,R1
Benzo(b)fluoranthene	**136**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	205-99-2	M1,R1
Benzo(e)pyrene	**60.4**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	192-97-2	R1
Benzo(g,h,i)perylene	**65.2**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	191-24-2	R1
Benzo(k)fluoranthene	**48.0**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	207-08-9	R1
2-Chloronaphthalene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	91-58-7	L2
Chrysene	**97.3**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	218-01-9	M1,R1
Dibenz(a,h)anthracene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	53-70-3	
Dibenzofuran	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	132-64-9	
Fluoranthene	**132**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	206-44-0	M1,R1
Fluorene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	86-73-7	
Indeno(1,2,3-cd)pyrene	**55.3**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	193-39-5	R1

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (15cm) **Lab ID: 10281597001** Collected: 09/16/14 08:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	91-57-6	
Naphthalene	**29.0**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	91-20-3	
Phenanthrene	**34.9**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	85-01-8	
Pyrene	**117**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27	129-00-0	M1,R1
Total BaP Eq. MN 2006sh. ND=RL	**151**	ug/kg	21.3	1	09/23/14 08:18	10/02/14 19:27		
Total PAHs	**995**	ug/kg		1	09/23/14 08:18	10/02/14 19:27	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	69	%.	30-150	1	09/23/14 08:18	10/02/14 19:27	321-60-8	
Terphenyl-d14 (S)	77	%.	30-150	1	09/23/14 08:18	10/02/14 19:27	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (50cm) **Lab ID: 10281597002** Collected: 09/16/14 08:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	55.9	1	10/02/14 12:45	10/03/14 18:18	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	50-128	1	10/02/14 12:45	10/03/14 18:18	877-09-8	
Decachlorobiphenyl (S)	72	%.	55-130	1	10/02/14 12:45	10/03/14 18:18	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.5**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:26	7440-38-2	
Cadmium	ND	mg/kg	0.24	1	09/27/14 14:07	10/05/14 04:26	7440-43-9	
Chromium	**16.1**	mg/kg	0.81	1	09/27/14 14:07	10/05/14 04:26	7440-47-3	
Copper	**11.9**	mg/kg	0.81	1	09/27/14 14:07	10/05/14 04:26	7440-50-8	
Lead	**6.4**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:26	7439-92-1	
Nickel	**13.1**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:26	7440-02-0	
Zinc	**40.0**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:26	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.040**	mg/kg	0.032	1	09/29/14 14:02	09/30/14 14:38	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**40.9**	%	0.10	1		09/25/14 14:04		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	83-32-9	
Acenaphthylene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	208-96-8	
Anthracene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	120-12-7	
Benzo(a)anthracene	**22.7**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	56-55-3	
Benzo(a)pyrene	**28.1**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	50-32-8	
Benzo(b)fluoranthene	**34.7**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	205-99-2	
Benzo(e)pyrene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	192-97-2	
Benzo(g,h,i)perylene	**20.9**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	91-58-7	L2
Chrysene	**21.3**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	53-70-3	
Dibenzofuran	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	132-64-9	
Fluoranthene	**38.9**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	206-44-0	
Fluorene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	86-73-7	
Indeno(1,2,3-cd)pyrene	**17.6**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (50cm) **Lab ID: 10281597002** Collected: 09/16/14 08:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	91-57-6	
Naphthalene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	91-20-3	
Phenanthrene	ND	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	85-01-8	
Pyrene	**33.7**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**47.0**	ug/kg	16.9	1	09/23/14 08:18	10/02/14 20:33		
Total PAHs	**218**	ug/kg		1	09/23/14 08:18	10/02/14 20:33	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	70	%.	30-150	1	09/23/14 08:18	10/02/14 20:33	321-60-8	
Terphenyl-d14 (S)	77	%.	30-150	1	09/23/14 08:18	10/02/14 20:33	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (100cm) **Lab ID: 10281597003** Collected: 09/16/14 08:50 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	52.9	1	10/02/14 12:45	10/03/14 18:34	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	54	%.	50-128	1	10/02/14 12:45	10/03/14 18:34	877-09-8	
Decachlorobiphenyl (S)	64	%.	55-130	1	10/02/14 12:45	10/03/14 18:34	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.9**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:29	7440-38-2	
Cadmium	ND	mg/kg	0.20	1	09/27/14 14:07	10/05/14 04:29	7440-43-9	
Chromium	**13.3**	mg/kg	0.67	1	09/27/14 14:07	10/05/14 04:29	7440-47-3	
Copper	**7.3**	mg/kg	0.67	1	09/27/14 14:07	10/05/14 04:29	7440-50-8	
Lead	**3.2**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:29	7439-92-1	
Nickel	**8.7**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:29	7440-02-0	
Zinc	**24.9**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:29	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.031	1	09/29/14 14:02	09/30/14 14:40	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**37.7**	%	0.10	1		09/25/14 14:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	83-32-9	
Acenaphthylene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	208-96-8	
Anthracene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	120-12-7	
Benzo(a)anthracene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	56-55-3	
Benzo(a)pyrene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	205-99-2	
Benzo(e)pyrene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	91-58-7	L2
Chrysene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	53-70-3	
Dibenzofuran	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	132-64-9	
Fluoranthene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	206-44-0	
Fluorene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1022-CH (100cm) **Lab ID: 10281597003** Collected: 09/16/14 08:50 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	91-57-6	
Naphthalene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	91-20-3	
Phenanthrene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	85-01-8	
Pyrene	ND	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**31.5**	ug/kg	16.0	1	09/23/14 08:18	10/02/14 20:55		
Total PAHs	**0.0000000053**	ug/kg		1	09/23/14 08:18	10/02/14 20:55	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	70	%.	30-150	1	09/23/14 08:18	10/02/14 20:55	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	09/23/14 08:18	10/02/14 20:55	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1023-CH (15cm) **Lab ID: 10281597004** Collected: 09/16/14 09:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	64.2	1	10/02/14 12:45	10/03/14 18:50	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	68	%.	50-128	1	10/02/14 12:45	10/03/14 18:50	877-09-8	
Decachlorobiphenyl (S)	70	%.	55-130	1	10/02/14 12:45	10/03/14 18:50	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.5**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:32	7440-38-2	
Cadmium	**0.60**	mg/kg	0.24	1	09/27/14 14:07	10/05/14 04:32	7440-43-9	
Chromium	**23.9**	mg/kg	0.80	1	09/27/14 14:07	10/05/14 04:32	7440-47-3	
Copper	**22.4**	mg/kg	0.80	1	09/27/14 14:07	10/05/14 04:32	7440-50-8	
Lead	**32.2**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:32	7439-92-1	
Nickel	**18.4**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:32	7440-02-0	
Zinc	**144**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:32	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.23**	mg/kg	0.038	1	09/29/14 14:02	09/30/14 14:42	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**48.7**	%	0.10	1		09/25/14 14:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	83-32-9	
Acenaphthylene	**27.0**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	208-96-8	
Anthracene	**48.6**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	120-12-7	
Benzo(a)anthracene	**189**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	56-55-3	
Benzo(a)pyrene	**220**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	50-32-8	
Benzo(b)fluoranthene	**275**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	205-99-2	
Benzo(e)pyrene	**133**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	192-97-2	
Benzo(g,h,i)perylene	**135**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	191-24-2	
Benzo(k)fluoranthene	**103**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	207-08-9	
2-Chloronaphthalene	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	91-58-7	L2
Chrysene	**219**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	218-01-9	
Dibenz(a,h)anthracene	**36.9**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	53-70-3	
Dibenzofuran	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	132-64-9	
Fluoranthene	**261**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	206-44-0	
Fluorene	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	86-73-7	
Indeno(1,2,3-cd)pyrene	**112**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1023-CH (15cm) **Lab ID: 10281597004** Collected: 09/16/14 09:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	90-12-0	
2-Methylnaphthalene	ND	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	91-57-6	
Naphthalene	**59.4**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	91-20-3	
Phenanthrene	**71.8**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	85-01-8	
Pyrene	**235**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**311**	ug/kg	19.5	1	09/23/14 08:18	10/02/14 21:17		
Total PAHs	**2120**	ug/kg		1	09/23/14 08:18	10/02/14 21:17	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	70	%.	30-150	1	09/23/14 08:18	10/02/14 21:17	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	09/23/14 08:18	10/02/14 21:17	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1023-CH (50cm) **Lab ID: 10281597005** Collected: 09/16/14 09:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	55.1	1	10/02/14 12:45	10/03/14 19:06	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	60	%.	50-128	1	10/02/14 12:45	10/03/14 19:06	877-09-8	
Decachlorobiphenyl (S)	62	%.	55-130	1	10/02/14 12:45	10/03/14 19:06	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.0**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 04:41	7440-38-2	
Cadmium	**0.24**	mg/kg	0.21	1	09/27/14 14:07	10/05/14 04:41	7440-43-9	
Chromium	**18.3**	mg/kg	0.68	1	09/27/14 14:07	10/05/14 04:41	7440-47-3	
Copper	**13.8**	mg/kg	0.68	1	09/27/14 14:07	10/05/14 04:41	7440-50-8	
Lead	**13.6**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 04:41	7439-92-1	
Nickel	**14.1**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 04:41	7440-02-0	
Zinc	**60.2**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 04:41	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.064**	mg/kg	0.028	1	09/29/14 14:02	09/30/14 14:48	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**40.5**	%	0.10	1		09/25/14 14:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	83-32-9	
Acenaphthylene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	208-96-8	
Anthracene	**17.7**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	120-12-7	
Benzo(a)anthracene	**68.2**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	56-55-3	
Benzo(a)pyrene	**89.6**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	50-32-8	
Benzo(b)fluoranthene	**120**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	205-99-2	
Benzo(e)pyrene	**52.0**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	192-97-2	
Benzo(g,h,i)perylene	**64.4**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	191-24-2	
Benzo(k)fluoranthene	**38.9**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	91-58-7	L2
Chrysene	**70.0**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	53-70-3	
Dibenzofuran	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	132-64-9	
Fluoranthene	**120**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	206-44-0	
Fluorene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**57.2**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1023-CH (50cm) **Lab ID: 10281597005** Collected: 09/16/14 09:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	91-57-6	
Naphthalene	ND	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	91-20-3	
Phenanthrene	**25.5**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	85-01-8	
Pyrene	**103**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**128**	ug/kg	16.8	1	09/23/14 08:18	10/02/14 21:39		
Total PAHs	**826**	ug/kg		1	09/23/14 08:18	10/02/14 21:39	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	73	%.	30-150	1	09/23/14 08:18	10/02/14 21:39	321-60-8	
Terphenyl-d14 (S)	84	%.	30-150	1	09/23/14 08:18	10/02/14 21:39	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (15cm) **Lab ID: 10281597006** Collected: 09/16/14 10:15 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	69.8	1	10/02/14 12:45	10/03/14 19:22	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	66	%.	50-128	1	10/02/14 12:45	10/03/14 19:22	877-09-8	
Decachlorobiphenyl (S)	69	%.	55-130	1	10/02/14 12:45	10/03/14 19:22	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.3**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 04:44	7440-38-2	
Cadmium	**0.36**	mg/kg	0.30	1	09/27/14 14:07	10/05/14 04:44	7440-43-9	
Chromium	**31.4**	mg/kg	1.0	1	09/27/14 14:07	10/05/14 04:44	7440-47-3	
Copper	**25.6**	mg/kg	1.0	1	09/27/14 14:07	10/05/14 04:44	7440-50-8	
Lead	**15.2**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 04:44	7439-92-1	
Nickel	**24.7**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 04:44	7440-02-0	
Zinc	**95.4**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 04:44	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.10**	mg/kg	0.041	1	09/29/14 14:02	09/30/14 14:50	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**52.7**	%	0.10	1		09/25/14 15:46		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	83-32-9	
Acenaphthylene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	208-96-8	
Anthracene	**23.9**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	120-12-7	
Benzo(a)anthracene	**58.0**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	56-55-3	
Benzo(a)pyrene	**64.7**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	50-32-8	
Benzo(b)fluoranthene	**85.4**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	205-99-2	
Benzo(e)pyrene	**42.7**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	192-97-2	
Benzo(g,h,i)perylene	**43.2**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	191-24-2	
Benzo(k)fluoranthene	**35.1**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	91-58-7	L2
Chrysene	**67.6**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	53-70-3	
Dibenzofuran	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	132-64-9	
Fluoranthene	**97.3**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	206-44-0	
Fluorene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	86-73-7	
Indeno(1,2,3-cd)pyrene	**35.5**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (15cm) **Lab ID: 10281597006** Collected: 09/16/14 10:15 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	91-57-6	
Naphthalene	ND	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	91-20-3	
Phenanthrene	**31.0**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	85-01-8	
Pyrene	**81.5**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**98.6**	ug/kg	21.1	1	09/23/14 08:18	10/02/14 22:00		
Total PAHs	**666**	ug/kg		1	09/23/14 08:18	10/02/14 22:00	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	65	%.	30-150	1	09/23/14 08:18	10/02/14 22:00	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	09/23/14 08:18	10/02/14 22:00	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (50cm) **Lab ID: 10281597007** Collected: 09/16/14 10:25 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	63.5	1	10/02/14 12:45	10/03/14 19:38	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	61	%.	50-128	1	10/02/14 12:45	10/03/14 19:38	877-09-8	
Decachlorobiphenyl (S)	70	%.	55-130	1	10/02/14 12:45	10/03/14 19:38	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**4.8**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:47	7440-38-2	
Cadmium	**0.35**	mg/kg	0.27	1	09/27/14 14:07	10/05/14 04:47	7440-43-9	
Chromium	**27.7**	mg/kg	0.92	1	09/27/14 14:07	10/05/14 04:47	7440-47-3	
Copper	**20.1**	mg/kg	0.92	1	09/27/14 14:07	10/05/14 04:47	7440-50-8	
Lead	**16.5**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:47	7439-92-1	
Nickel	**21.0**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:47	7440-02-0	
Zinc	**94.7**	mg/kg	1.8	1	09/27/14 14:07	10/05/14 04:47	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.10**	mg/kg	0.038	1	09/29/14 14:02	09/30/14 14:52	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**48.0**	%	0.10	1		09/25/14 15:47		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	83-32-9	
Acenaphthylene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	208-96-8	
Anthracene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	120-12-7	
Benzo(a)anthracene	**48.0**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	56-55-3	
Benzo(a)pyrene	**55.0**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	50-32-8	
Benzo(b)fluoranthene	**70.3**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	205-99-2	
Benzo(e)pyrene	**35.0**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	192-97-2	
Benzo(g,h,i)perylene	**35.7**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	191-24-2	
Benzo(k)fluoranthene	**24.3**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	207-08-9	
2-Chloronaphthalene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	91-58-7	L2
Chrysene	**57.2**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	53-70-3	
Dibenzofuran	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	132-64-9	
Fluoranthene	**82.1**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	206-44-0	
Fluorene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**30.1**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (50cm) **Lab ID: 10281597007** Collected: 09/16/14 10:25 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	90-12-0	
2-Methylnaphthalene	ND	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	91-57-6	
Naphthalene	**20.5**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	91-20-3	
Phenanthrene	**30.0**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	85-01-8	
Pyrene	**67.5**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**83.7**	ug/kg	19.2	1	09/23/14 08:18	10/02/14 22:23		
Total PAHs	**556**	ug/kg		1	09/23/14 08:18	10/02/14 22:23	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/23/14 08:18	10/02/14 22:23	321-60-8	
Terphenyl-d14 (S)	82	%.	30-150	1	09/23/14 08:18	10/02/14 22:23	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (100cm) **Lab ID: 10281597008** Collected: 09/16/14 10:35 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	67.0	1	10/02/14 12:45	10/03/14 19:54	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	70	%.	50-128	1	10/02/14 12:45	10/03/14 19:54	877-09-8	
Decachlorobiphenyl (S)	74	%.	55-130	1	10/02/14 12:45	10/03/14 19:54	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.0**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 04:50	7440-38-2	
Cadmium	**0.50**	mg/kg	0.29	1	09/27/14 14:07	10/05/14 04:50	7440-43-9	
Chromium	**32.0**	mg/kg	0.96	1	09/27/14 14:07	10/05/14 04:50	7440-47-3	
Copper	**25.1**	mg/kg	0.96	1	09/27/14 14:07	10/05/14 04:50	7440-50-8	
Lead	**24.2**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 04:50	7439-92-1	
Nickel	**24.4**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 04:50	7440-02-0	
Zinc	**124**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 04:50	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.15**	mg/kg	0.037	1	09/29/14 14:02	09/30/14 14:54	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**50.7**	%	0.10	1		09/25/14 15:47		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	83-32-9	
Acenaphthylene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	208-96-8	
Anthracene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	120-12-7	
Benzo(a)anthracene	**42.4**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	56-55-3	
Benzo(a)pyrene	**49.9**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	50-32-8	
Benzo(b)fluoranthene	**58.9**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	205-99-2	
Benzo(e)pyrene	**31.0**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	192-97-2	
Benzo(g,h,i)perylene	**32.1**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	207-08-9	
2-Chloronaphthalene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	91-58-7	L2
Chrysene	**45.5**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	53-70-3	
Dibenzofuran	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	132-64-9	
Fluoranthene	**71.4**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	206-44-0	
Fluorene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	86-73-7	
Indeno(1,2,3-cd)pyrene	**26.1**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1024-CH (100cm) **Lab ID: 10281597008** Collected: 09/16/14 10:35 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	90-12-0	
2-Methylnaphthalene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	91-57-6	
Naphthalene	ND	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	91-20-3	
Phenanthrene	**26.1**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	85-01-8	
Pyrene	**58.2**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**76.5**	ug/kg	20.2	1	09/23/14 08:18	10/02/14 22:44		
Total PAHs	**442**	ug/kg		1	09/23/14 08:18	10/02/14 22:44	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	09/23/14 08:18	10/02/14 22:44	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	09/23/14 08:18	10/02/14 22:44	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (15cm) **Lab ID: 10281597009** Collected: 09/16/14 11:20 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	112	1	10/02/14 12:45	10/03/14 20:10	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/02/14 12:45	10/03/14 20:10	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/02/14 12:45	10/03/14 20:10	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**9.2**	mg/kg	3.2	1	09/27/14 14:07	10/05/14 04:53	7440-38-2	
Cadmium	**1.1**	mg/kg	0.49	1	09/27/14 14:07	10/05/14 04:53	7440-43-9	
Chromium	**30.8**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:53	7440-47-3	
Copper	**48.7**	mg/kg	1.6	1	09/27/14 14:07	10/05/14 04:53	7440-50-8	
Lead	**45.6**	mg/kg	3.2	1	09/27/14 14:07	10/05/14 04:53	7439-92-1	
Nickel	**30.4**	mg/kg	3.2	1	09/27/14 14:07	10/05/14 04:53	7440-02-0	
Zinc	**168**	mg/kg	3.2	1	09/27/14 14:07	10/05/14 04:53	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.32**	mg/kg	0.062	1	09/29/14 14:02	09/30/14 14:57	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**70.6**	%	0.10	1		09/25/14 15:48		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	83-32-9	
Acenaphthylene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	208-96-8	
Anthracene	**78.7**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	120-12-7	
Benzo(a)anthracene	**86.0**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	56-55-3	
Benzo(a)pyrene	**90.5**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	50-32-8	
Benzo(b)fluoranthene	**151**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	205-99-2	
Benzo(e)pyrene	**72.9**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	192-97-2	
Benzo(g,h,i)perylene	**64.7**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	191-24-2	
Benzo(k)fluoranthene	**55.2**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	207-08-9	
2-Chloronaphthalene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	91-58-7	L2
Chrysene	**135**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	53-70-3	
Dibenzofuran	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	132-64-9	
Fluoranthene	**179**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	206-44-0	
Fluorene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	86-73-7	
Indeno(1,2,3-cd)pyrene	**53.5**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (15cm) **Lab ID: 10281597009** Collected: 09/16/14 11:20 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	90-12-0	
2-Methylnaphthalene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	91-57-6	
Naphthalene	ND	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	91-20-3	
Phenanthrene	**62.9**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	85-01-8	
Pyrene	**156**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**145**	ug/kg	34.0	1	09/23/14 08:18	10/02/14 23:06		
Total PAHs	**1190**	ug/kg		1	09/23/14 08:18	10/02/14 23:06	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	09/23/14 08:18	10/02/14 23:06	321-60-8	
Terphenyl-d14 (S)	79	%.	30-150	1	09/23/14 08:18	10/02/14 23:06	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (50cm) **Lab ID: 10281597010** Collected: 09/16/14 11:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	105	1	10/02/14 12:45	10/03/14 20:26	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	50-128	1	10/02/14 12:45	10/03/14 20:26	877-09-8	
Decachlorobiphenyl (S)	71	%.	55-130	1	10/02/14 12:45	10/03/14 20:26	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**17.5**	mg/kg	2.5	1	09/27/14 14:07	10/05/14 04:56	7440-38-2	
Cadmium	**1.5**	mg/kg	0.37	1	09/27/14 14:07	10/05/14 04:56	7440-43-9	
Chromium	**27.9**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 04:56	7440-47-3	
Copper	**43.1**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 04:56	7440-50-8	
Lead	**49.4**	mg/kg	2.5	1	09/27/14 14:07	10/05/14 04:56	7439-92-1	
Nickel	**25.6**	mg/kg	2.5	1	09/27/14 14:07	10/05/14 04:56	7440-02-0	
Zinc	**165**	mg/kg	2.5	1	09/27/14 14:07	10/05/14 04:56	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.42**	mg/kg	0.053	1	09/29/14 14:02	09/30/14 14:59	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**68.7**	%	0.10	1		09/25/14 15:48		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	83-32-9	
Acenaphthylene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	208-96-8	
Anthracene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	120-12-7	
Benzo(a)anthracene	**65.7**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	56-55-3	
Benzo(a)pyrene	**78.9**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	50-32-8	
Benzo(b)fluoranthene	**100**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	205-99-2	
Benzo(e)pyrene	**48.9**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	192-97-2	
Benzo(g,h,i)perylene	**49.0**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	191-24-2	
Benzo(k)fluoranthene	**39.5**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	207-08-9	
2-Chloronaphthalene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	91-58-7	L2
Chrysene	**74.9**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	53-70-3	
Dibenzofuran	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	132-64-9	
Fluoranthene	**115**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	206-44-0	
Fluorene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**40.8**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (50cm) **Lab ID: 10281597010** Collected: 09/16/14 11:30 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	90-12-0	
2-Methylnaphthalene	ND	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	91-57-6	
Naphthalene	**68.1**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	91-20-3	
Phenanthrene	**49.3**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	85-01-8	
Pyrene	**100**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**122**	ug/kg	31.8	1	09/23/14 08:18	10/02/14 23:28		
Total PAHs	**830**	ug/kg		1	09/23/14 08:18	10/02/14 23:28	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	09/23/14 08:18	10/02/14 23:28	321-60-8	
Terphenyl-d14 (S)	80	%.	30-150	1	09/23/14 08:18	10/02/14 23:28	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (100cm) **Lab ID: 10281597011** Collected: 09/16/14 11:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	54.2	1	10/02/14 12:45	10/03/14 20:42	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	66	%.	50-128	1	10/02/14 12:45	10/03/14 20:42	877-09-8	
Decachlorobiphenyl (S)	72	%.	55-130	1	10/02/14 12:45	10/03/14 20:42	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.4**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:59	7440-38-2	
Cadmium	ND	mg/kg	0.20	1	09/27/14 14:07	10/05/14 04:59	7440-43-9	
Chromium	**9.6**	mg/kg	0.67	1	09/27/14 14:07	10/05/14 04:59	7440-47-3	
Copper	**7.1**	mg/kg	0.67	1	09/27/14 14:07	10/05/14 04:59	7440-50-8	
Lead	**5.0**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:59	7439-92-1	
Nickel	**8.4**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:59	7440-02-0	
Zinc	**24.6**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 04:59	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.034**	mg/kg	0.031	1	09/29/14 14:02	09/30/14 15:01	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**39.2**	%	0.10	1		09/25/14 15:48		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	83-32-9	
Acenaphthylene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	208-96-8	
Anthracene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	120-12-7	
Benzo(a)anthracene	**21.0**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	56-55-3	
Benzo(a)pyrene	**24.6**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	50-32-8	
Benzo(b)fluoranthene	**32.1**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	205-99-2	
Benzo(e)pyrene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	192-97-2	
Benzo(g,h,i)perylene	**20.1**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	91-58-7	L2
Chrysene	**25.2**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	53-70-3	
Dibenzofuran	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	132-64-9	
Fluoranthene	**39.4**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	206-44-0	
Fluorene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1025-CH (100cm) **Lab ID: 10281597011** Collected: 09/16/14 11:40 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	91-57-6	
Naphthalene	ND	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	91-20-3	
Phenanthrene	**18.0**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	85-01-8	
Pyrene	**34.8**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**42.7**	ug/kg	16.4	1	09/23/14 08:18	10/02/14 23:50		
Total PAHs	**215**	ug/kg		1	09/23/14 08:18	10/02/14 23:50	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	09/23/14 08:18	10/02/14 23:50	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	09/23/14 08:18	10/02/14 23:50	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: DUP-01-CH **Lab ID: 10281597012** Collected: 09/16/14 00:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	56.3	1	10/02/14 12:45	10/03/14 20:58	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	65	%.	50-128	1	10/02/14 12:45	10/03/14 20:58	877-09-8	
Decachlorobiphenyl (S)	68	%.	55-130	1	10/02/14 12:45	10/03/14 20:58	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.2**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 05:02	7440-38-2	
Cadmium	**0.24**	mg/kg	0.18	1	09/27/14 14:07	10/05/14 05:02	7440-43-9	
Chromium	**20.0**	mg/kg	0.60	1	09/27/14 14:07	10/05/14 05:02	7440-47-3	
Copper	**14.5**	mg/kg	0.60	1	09/27/14 14:07	10/05/14 05:02	7440-50-8	
Lead	**13.5**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 05:02	7439-92-1	
Nickel	**14.9**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 05:02	7440-02-0	
Zinc	**61.1**	mg/kg	1.2	1	09/27/14 14:07	10/05/14 05:02	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.080**	mg/kg	0.031	1	09/29/14 14:02	09/30/14 15:03	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**41.8**	%	0.10	1		09/25/14 15:49		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	83-32-9	
Acenaphthylene	**21.2**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	208-96-8	
Anthracene	**31.4**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	120-12-7	
Benzo(a)anthracene	**136**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	56-55-3	
Benzo(a)pyrene	**165**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	50-32-8	
Benzo(b)fluoranthene	**213**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	205-99-2	
Benzo(e)pyrene	**95.5**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	192-97-2	
Benzo(g,h,i)perylene	**117**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	191-24-2	
Benzo(k)fluoranthene	**91.8**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	207-08-9	
2-Chloronaphthalene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	91-58-7	L2
Chrysene	**136**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	53-70-3	
Dibenzofuran	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	132-64-9	
Fluoranthene	**235**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	206-44-0	
Fluorene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	86-73-7	
Indeno(1,2,3-cd)pyrene	**106**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: DUP-01-CH **Lab ID: 10281597012** Collected: 09/16/14 00:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	90-12-0	
2-Methylnaphthalene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	91-57-6	
Naphthalene	ND	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	91-20-3	
Phenanthrene	**44.2**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	85-01-8	
Pyrene	**202**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**231**	ug/kg	17.1	1	09/23/14 08:18	10/03/14 00:12		
Total PAHs	**1590**	ug/kg		1	09/23/14 08:18	10/03/14 00:12	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/23/14 08:18	10/03/14 00:12	321-60-8	
Terphenyl-d14 (S)	80	%.	30-150	1	09/23/14 08:18	10/03/14 00:12	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (15cm) **Lab ID: 10281597013** Collected: 09/15/14 15:45 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	57.2	1	10/02/14 12:45	10/03/14 21:14	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	70	%.	50-128	1	10/02/14 12:45	10/03/14 21:14	877-09-8	
Decachlorobiphenyl (S)	70	%.	55-130	1	10/02/14 12:45	10/03/14 21:14	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.8**	mg/kg	1.7	1	09/27/14 14:07	10/05/14 05:05	7440-38-2	
Cadmium	**0.33**	mg/kg	0.26	1	09/27/14 14:07	10/05/14 05:05	7440-43-9	
Chromium	**18.9**	mg/kg	0.87	1	09/27/14 14:07	10/05/14 05:05	7440-47-3	
Copper	**16.6**	mg/kg	0.87	1	09/27/14 14:07	10/05/14 05:05	7440-50-8	
Lead	**13.5**	mg/kg	1.7	1	09/27/14 14:07	10/05/14 05:05	7439-92-1	
Nickel	**14.7**	mg/kg	1.7	1	09/27/14 14:07	10/05/14 05:05	7440-02-0	
Zinc	**60.8**	mg/kg	1.7	1	09/27/14 14:07	10/05/14 05:05	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.082**	mg/kg	0.034	1	09/29/14 14:02	09/30/14 15:05	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**42.5**	%	0.10	1		09/25/14 15:49		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	83-32-9	
Acenaphthylene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	208-96-8	
Anthracene	**19.9**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	120-12-7	
Benzo(a)anthracene	**44.8**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	56-55-3	
Benzo(a)pyrene	**52.5**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	50-32-8	
Benzo(b)fluoranthene	**81.4**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	205-99-2	
Benzo(e)pyrene	**39.0**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	192-97-2	
Benzo(g,h,i)perylene	**36.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	191-24-2	
Benzo(k)fluoranthene	**31.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	207-08-9	
2-Chloronaphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	91-58-7	L2
Chrysene	**63.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	53-70-3	
Dibenzofuran	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	132-64-9	
Fluoranthene	**79.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	206-44-0	
Fluorene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	86-73-7	
Indeno(1,2,3-cd)pyrene	**30.1**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (15cm) **Lab ID: 10281597013** Collected: 09/15/14 15:45 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	90-12-0	
2-Methylnaphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	91-57-6	
Naphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	91-20-3	
Phenanthrene	**29.9**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	85-01-8	
Pyrene	**69.2**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**81.6**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 00:34		
Total PAHs	**577**	ug/kg		1	09/23/14 08:18	10/03/14 00:34	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	40	%.	30-150	1	09/23/14 08:18	10/03/14 00:34	321-60-8	
Terphenyl-d14 (S)	43	%.	30-150	1	09/23/14 08:18	10/03/14 00:34	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (50cm) **Lab ID: 10281597014** Collected: 09/15/14 16:10 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	71.8	1	10/02/14 12:45	10/03/14 21:30	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	59	%.	50-128	1	10/02/14 12:45	10/03/14 21:30	877-09-8	
Decachlorobiphenyl (S)	60	%.	55-130	1	10/02/14 12:45	10/03/14 21:30	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.9**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 05:08	7440-38-2	
Cadmium	**0.65**	mg/kg	0.28	1	09/27/14 14:07	10/05/14 05:08	7440-43-9	
Chromium	**25.1**	mg/kg	0.95	1	09/27/14 14:07	10/05/14 05:08	7440-47-3	
Copper	**27.7**	mg/kg	0.95	1	09/27/14 14:07	10/05/14 05:08	7440-50-8	
Lead	**28.8**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 05:08	7439-92-1	
Nickel	**19.6**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 05:08	7440-02-0	
Zinc	**104**	mg/kg	1.9	1	09/27/14 14:07	10/05/14 05:08	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.14**	mg/kg	0.044	1	09/29/14 14:02	09/30/14 15:11	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**54.2**	%	0.10	1		09/25/14 15:49		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	83-32-9	
Acenaphthylene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	208-96-8	
Anthracene	**24.0**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	120-12-7	
Benzo(a)anthracene	**86.8**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	56-55-3	
Benzo(a)pyrene	**95.2**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	50-32-8	
Benzo(b)fluoranthene	**132**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	205-99-2	
Benzo(e)pyrene	**65.7**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	192-97-2	
Benzo(g,h,i)perylene	**62.8**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	191-24-2	
Benzo(k)fluoranthene	**50.6**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	91-58-7	L2
Chrysene	**101**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	53-70-3	
Dibenzofuran	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	132-64-9	
Fluoranthene	**154**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	206-44-0	
Fluorene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	86-73-7	
Indeno(1,2,3-cd)pyrene	**49.0**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (50cm) **Lab ID: 10281597014** Collected: 09/15/14 16:10 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	91-57-6	
Naphthalene	**32.8**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	91-20-3	
Phenanthrene	**64.9**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	85-01-8	
Pyrene	**127**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**140**	ug/kg	21.8	1	09/23/14 08:18	10/03/14 00:56		
Total PAHs	**1050**	ug/kg		1	09/23/14 08:18	10/03/14 00:56	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	62	%.	30-150	1	09/23/14 08:18	10/03/14 00:56	321-60-8	
Terphenyl-d14 (S)	76	%.	30-150	1	09/23/14 08:18	10/03/14 00:56	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (100cm) **Lab ID: 10281597015** Collected: 09/15/14 16:15 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	73.4	1	10/02/14 12:45	10/03/14 21:46	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	50-128	1	10/02/14 12:45	10/03/14 21:46	877-09-8	
Decachlorobiphenyl (S)	65	%.	55-130	1	10/02/14 12:45	10/03/14 21:46	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**11.0**	mg/kg	2.2	1	09/27/14 14:07	10/05/14 05:17	7440-38-2	
Cadmium	**0.80**	mg/kg	0.33	1	09/27/14 14:07	10/05/14 05:17	7440-43-9	
Chromium	**21.3**	mg/kg	1.1	1	09/27/14 14:07	10/05/14 05:17	7440-47-3	
Copper	**27.2**	mg/kg	1.1	1	09/27/14 14:07	10/05/14 05:17	7440-50-8	
Lead	**30.6**	mg/kg	2.2	1	09/27/14 14:07	10/05/14 05:17	7439-92-1	
Nickel	**19.1**	mg/kg	2.2	1	09/27/14 14:07	10/05/14 05:17	7440-02-0	
Zinc	**111**	mg/kg	2.2	1	09/27/14 14:07	10/05/14 05:17	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.28**	mg/kg	0.043	1	09/29/14 14:02	09/30/14 15:13	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**55.0**	%	0.10	1		09/25/14 15:50		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	83-32-9	
Acenaphthylene	**27.8**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	208-96-8	
Anthracene	**41.1**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	120-12-7	
Benzo(a)anthracene	**139**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	56-55-3	
Benzo(a)pyrene	**150**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	50-32-8	
Benzo(b)fluoranthene	**198**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	205-99-2	
Benzo(e)pyrene	**94.2**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	192-97-2	
Benzo(g,h,i)perylene	**88.7**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	191-24-2	
Benzo(k)fluoranthene	**65.5**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	207-08-9	
2-Chloronaphthalene	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	91-58-7	L2
Chrysene	**153**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	53-70-3	
Dibenzofuran	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	132-64-9	
Fluoranthene	**221**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	206-44-0	
Fluorene	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	86-73-7	
Indeno(1,2,3-cd)pyrene	**72.9**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1032-CH (100cm) **Lab ID: 10281597015** Collected: 09/15/14 16:15 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	90-12-0	
2-Methylnaphthalene	**40.2**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	91-57-6	
Naphthalene	**191**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	91-20-3	
Phenanthrene	**81.4**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	85-01-8	
Pyrene	**192**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**212**	ug/kg	22.2	1	09/23/14 08:18	10/03/14 01:18		
Total PAHs	**1720**	ug/kg		1	09/23/14 08:18	10/03/14 01:18	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/23/14 08:18	10/03/14 01:18	321-60-8	
Terphenyl-d14 (S)	82	%.	30-150	1	09/23/14 08:18	10/03/14 01:18	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1030-CH (15cm) **Lab ID: 10281597016** Collected: 09/15/14 17:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	67.8	1	10/02/14 12:45	10/03/14 22:01	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	75	%.	50-128	1	10/02/14 12:45	10/03/14 22:01	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/02/14 12:45	10/03/14 22:01	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.5**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:20	7440-38-2	
Cadmium	**0.35**	mg/kg	0.22	1	09/27/14 14:07	10/05/14 05:20	7440-43-9	
Chromium	**21.0**	mg/kg	0.75	1	09/27/14 14:07	10/05/14 05:20	7440-47-3	
Copper	**18.7**	mg/kg	0.75	1	09/27/14 14:07	10/05/14 05:20	7440-50-8	
Lead	**15.2**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:20	7439-92-1	
Nickel	**15.9**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:20	7440-02-0	
Zinc	**75.3**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:20	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.097**	mg/kg	0.035	1	09/29/14 14:02	09/30/14 15:15	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**51.3**	%	0.10	1		09/25/14 15:50		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	83-32-9	
Acenaphthylene	**39.5**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	208-96-8	
Anthracene	**94.5**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	120-12-7	
Benzo(a)anthracene	**167**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	56-55-3	
Benzo(a)pyrene	**188**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	50-32-8	
Benzo(b)fluoranthene	**309**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	205-99-2	
Benzo(e)pyrene	**146**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	192-97-2	
Benzo(g,h,i)perylene	**139**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	191-24-2	
Benzo(k)fluoranthene	**93.7**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	207-08-9	
2-Chloronaphthalene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	91-58-7	L2
Chrysene	**263**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	53-70-3	
Dibenzofuran	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	132-64-9	
Fluoranthene	**330**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	206-44-0	
Fluorene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**115**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1030-CH (15cm) **Lab ID: 10281597016** Collected: 09/15/14 17:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	90-12-0	
2-Methylnaphthalene	ND	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	91-57-6	
Naphthalene	**36.5**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	91-20-3	
Phenanthrene	**111**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	85-01-8	
Pyrene	**294**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**271**	ug/kg	20.5	1	09/23/14 08:18	10/03/14 01:40		
Total PAHs	**2330**	ug/kg		1	09/23/14 08:18	10/03/14 01:40	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	70	%.	30-150	1	09/23/14 08:18	10/03/14 01:40	321-60-8	
Terphenyl-d14 (S)	80	%.	30-150	1	09/23/14 08:18	10/03/14 01:40	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1030-CH (50cm) **Lab ID: 10281597017** Collected: 09/15/14 17:10 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.8	1	10/02/14 12:45	10/03/14 22:49	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	50	%.	50-128	1	10/02/14 12:45	10/03/14 22:49	877-09-8	
Decachlorobiphenyl (S)	52	%.	55-130	1	10/02/14 12:45	10/03/14 22:49	2051-24-3	S0
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.9**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 05:23	7440-38-2	
Cadmium	ND	mg/kg	0.19	1	09/27/14 14:07	10/05/14 05:23	7440-43-9	
Chromium	**10.5**	mg/kg	0.63	1	09/27/14 14:07	10/05/14 05:23	7440-47-3	
Copper	**7.5**	mg/kg	0.63	1	09/27/14 14:07	10/05/14 05:23	7440-50-8	
Lead	**6.0**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 05:23	7439-92-1	
Nickel	**8.0**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 05:23	7440-02-0	
Zinc	**27.9**	mg/kg	1.3	1	09/27/14 14:07	10/05/14 05:23	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.035**	mg/kg	0.023	1	09/29/14 14:02	09/30/14 15:17	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**26.8**	%	0.10	1		09/25/14 15:50		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	83-32-9	
Acenaphthylene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	208-96-8	
Anthracene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	120-12-7	
Benzo(a)anthracene	**28.5**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	56-55-3	
Benzo(a)pyrene	**33.4**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	50-32-8	
Benzo(b)fluoranthene	**43.6**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	205-99-2	
Benzo(e)pyrene	**22.6**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	192-97-2	
Benzo(g,h,i)perylene	**23.3**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	191-24-2	
Benzo(k)fluoranthene	**17.0**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	91-58-7	L2
Chrysene	**33.3**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	53-70-3	
Dibenzofuran	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	132-64-9	
Fluoranthene	**51.7**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	206-44-0	
Fluorene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	86-73-7	
Indeno(1,2,3-cd)pyrene	**18.8**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1030-CH (50cm) **Lab ID: 10281597017** Collected: 09/15/14 17:10 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	90-12-0	
2-Methylnaphthalene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	91-57-6	
Naphthalene	ND	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	91-20-3	
Phenanthrene	**24.5**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	85-01-8	
Pyrene	**46.0**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**52.2**	ug/kg	13.6	1	09/23/14 08:18	10/03/14 02:02		
Total PAHs	**343**	ug/kg		1	09/23/14 08:18	10/03/14 02:02	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	09/23/14 08:18	10/03/14 02:02	321-60-8	
Terphenyl-d14 (S)	80	%.	30-150	1	09/23/14 08:18	10/03/14 02:02	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (15cm) **Lab ID: 10281597018** Collected: 09/15/14 17:45 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	57.4	1	10/02/14 12:45	10/03/14 23:05	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	58	%.	50-128	1	10/02/14 12:45	10/03/14 23:05	877-09-8	
Decachlorobiphenyl (S)	61	%.	55-130	1	10/02/14 12:45	10/03/14 23:05	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.6**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:26	7440-38-2	
Cadmium	**0.28**	mg/kg	0.23	1	09/27/14 14:07	10/05/14 05:26	7440-43-9	
Chromium	**17.6**	mg/kg	0.76	1	09/27/14 14:07	10/05/14 05:26	7440-47-3	
Copper	**16.8**	mg/kg	0.76	1	09/27/14 14:07	10/05/14 05:26	7440-50-8	
Lead	**13.6**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:26	7439-92-1	
Nickel	**14.1**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:26	7440-02-0	
Zinc	**61.8**	mg/kg	1.5	1	09/27/14 14:07	10/05/14 05:26	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.086**	mg/kg	0.033	1	09/29/14 14:02	09/30/14 15:19	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**42.5**	%	0.10	1		09/25/14 15:51		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	83-32-9	
Acenaphthylene	**23.1**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	208-96-8	
Anthracene	**38.2**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	120-12-7	
Benzo(a)anthracene	**96.8**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	56-55-3	
Benzo(a)pyrene	**109**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	50-32-8	
Benzo(b)fluoranthene	**162**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	205-99-2	
Benzo(e)pyrene	**79.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	192-97-2	
Benzo(g,h,i)perylene	**77.3**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	191-24-2	
Benzo(k)fluoranthene	**52.7**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	207-08-9	
2-Chloronaphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	91-58-7	L2
Chrysene	**125**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	53-70-3	
Dibenzofuran	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	132-64-9	
Fluoranthene	**175**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	206-44-0	
Fluorene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	86-73-7	
Indeno(1,2,3-cd)pyrene	**61.4**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (15cm) **Lab ID: 10281597018** Collected: 09/15/14 17:45 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	90-12-0	
2-Methylnaphthalene	**19.2**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	91-57-6	
Naphthalene	**46.6**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	91-20-3	
Phenanthrene	**68.9**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	85-01-8	
Pyrene	**152**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**158**	ug/kg	17.4	1	09/23/14 08:18	10/03/14 02:24		
Total PAHs	**1270**	ug/kg		1	09/23/14 08:18	10/03/14 02:24	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	09/23/14 08:18	10/03/14 02:24	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	09/23/14 08:18	10/03/14 02:24	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (50cm) **Lab ID: 10281597019** Collected: 09/15/14 17:55 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	73.6	1	10/02/14 12:45	10/03/14 23:21	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	64	%.	50-128	1	10/02/14 12:45	10/03/14 23:21	877-09-8	
Decachlorobiphenyl (S)	70	%.	55-130	1	10/02/14 12:45	10/03/14 23:21	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**10.6**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 05:29	7440-38-2	
Cadmium	**0.62**	mg/kg	0.30	1	09/27/14 14:07	10/05/14 05:29	7440-43-9	
Chromium	**20.2**	mg/kg	0.99	1	09/27/14 14:07	10/05/14 05:29	7440-47-3	
Copper	**24.9**	mg/kg	0.99	1	09/27/14 14:07	10/05/14 05:29	7440-50-8	
Lead	**25.6**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 05:29	7439-92-1	
Nickel	**19.1**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 05:29	7440-02-0	
Zinc	**102**	mg/kg	2.0	1	09/27/14 14:07	10/05/14 05:29	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.23**	mg/kg	0.039	1	09/29/14 14:02	09/30/14 15:21	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**55.3**	%	0.10	1		09/25/14 15:51		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	83-32-9	
Acenaphthylene	**49.0**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	208-96-8	
Anthracene	**71.0**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	120-12-7	
Benzo(a)anthracene	**270**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	56-55-3	
Benzo(a)pyrene	**296**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	50-32-8	
Benzo(b)fluoranthene	**373**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	205-99-2	
Benzo(e)pyrene	**181**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	192-97-2	
Benzo(g,h,i)perylene	**170**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	191-24-2	
Benzo(k)fluoranthene	**128**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	207-08-9	
2-Chloronaphthalene	ND	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	91-58-7	L2
Chrysene	**303**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	53-70-3	
Dibenzofuran	ND	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	132-64-9	
Fluoranthene	**389**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	206-44-0	
Fluorene	**27.6**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	86-73-7	
Indeno(1,2,3-cd)pyrene	**144**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (50cm) **Lab ID: 10281597019** Collected: 09/15/14 17:55 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**31.3**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	90-12-0	
2-Methylnaphthalene	**55.7**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	91-57-6	
Naphthalene	**303**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	91-20-3	
Phenanthrene	**125**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	85-01-8	
Pyrene	**339**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**403**	ug/kg	22.3	1	09/23/14 08:18	10/03/14 02:46		
Total PAHs	**3170**	ug/kg		1	09/23/14 08:18	10/03/14 02:46	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/23/14 08:18	10/03/14 02:46	321-60-8	
Terphenyl-d14 (S)	79	%.	30-150	1	09/23/14 08:18	10/03/14 02:46	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (100cm) **Lab ID: 10281597020** Collected: 09/15/14 18:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.6	1	10/03/14 10:21	10/05/14 16:52	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	50-128	1	10/03/14 10:21	10/05/14 16:52	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/03/14 10:21	10/05/14 16:52	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.8**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 05:32	7440-38-2	
Cadmium	ND	mg/kg	0.21	1	09/27/14 14:07	10/05/14 05:32	7440-43-9	
Chromium	**14.4**	mg/kg	0.70	1	09/27/14 14:07	10/05/14 05:32	7440-47-3	
Copper	**9.8**	mg/kg	0.70	1	09/27/14 14:07	10/05/14 05:32	7440-50-8	
Lead	**5.6**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 05:32	7439-92-1	
Nickel	**11.3**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 05:32	7440-02-0	
Zinc	**32.4**	mg/kg	1.4	1	09/27/14 14:07	10/05/14 05:32	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.053**	mg/kg	0.028	1	09/29/14 14:02	09/30/14 15:23	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**32.2**	%	0.10	1		09/25/14 15:51		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	83-32-9	
Acenaphthylene	**16.9**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	208-96-8	
Anthracene	**22.8**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	120-12-7	
Benzo(a)anthracene	**72.3**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	56-55-3	
Benzo(a)pyrene	**77.9**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	50-32-8	
Benzo(b)fluoranthene	**106**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	205-99-2	
Benzo(e)pyrene	**46.7**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	192-97-2	
Benzo(g,h,i)perylene	**45.4**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	191-24-2	
Benzo(k)fluoranthene	**36.8**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	207-08-9	
2-Chloronaphthalene	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	91-58-7	L2
Chrysene	**79.4**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	53-70-3	
Dibenzofuran	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	132-64-9	
Fluoranthene	**122**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	206-44-0	
Fluorene	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	86-73-7	
Indeno(1,2,3-cd)pyrene	**38.8**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1021-CH (100cm) **Lab ID: 10281597020** Collected: 09/15/14 18:00 Received: 09/16/14 18:22 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	90-12-0	
2-Methylnaphthalene	**26.1**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	91-57-6	
Naphthalene	**172**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	91-20-3	
Phenanthrene	**38.0**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	85-01-8	
Pyrene	**106**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**112**	ug/kg	14.7	1	09/23/14 08:18	10/03/14 03:08		
Total PAHs	**981**	ug/kg		1	09/23/14 08:18	10/03/14 03:08	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/23/14 08:18	10/03/14 03:08	321-60-8	
Terphenyl-d14 (S)	70	%.	30-150	1	09/23/14 08:18	10/03/14 03:08	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: EB-01-CH **Lab ID: 10281597021** Collected: 09/15/14 18:30 Received: 09/16/14 18:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510							
Acenaphthene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	83-32-9	
Acenaphthylene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	208-96-8	
Anthracene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	207-08-9	
Chrysene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	53-70-3	
Fluoranthene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	206-44-0	
Fluorene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	193-39-5	
Naphthalene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	91-20-3	
Phenanthrene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	85-01-8	
Pyrene	ND	ug/L	0.045	1	09/19/14 10:45	10/01/14 15:07	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	77	%.	54-125	1	09/19/14 10:45	10/01/14 15:07	321-60-8	
Terphenyl-d14 (S)	92	%.	68-125	1	09/19/14 10:45	10/01/14 15:07	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (15cm) **Lab ID: 10281597022** Collected: 09/16/14 14:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	11097-69-1	
PCB-1260 (Aroclor 1260)	**78.3**	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	72.4	1	10/03/14 10:21	10/05/14 17:40	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	65	%.	50-128	1	10/03/14 10:21	10/05/14 17:40	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:21	10/05/14 17:40	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.0**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:26	7440-38-2	
Cadmium	**0.55**	mg/kg	0.28	1	10/01/14 09:24	10/05/14 02:26	7440-43-9	
Chromium	**18.5**	mg/kg	0.94	1	10/01/14 09:24	10/05/14 02:26	7440-47-3	
Copper	**32.3**	mg/kg	0.94	1	10/01/14 09:24	10/05/14 02:26	7440-50-8	
Lead	**44.9**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:26	7439-92-1	
Nickel	**17.0**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:26	7440-02-0	
Zinc	**90.8**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:26	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.14**	mg/kg	0.040	1	10/01/14 14:51	10/02/14 16:05	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**54.6**	%	0.10	1		09/26/14 16:38		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	83-32-9	
Acenaphthylene	**39.2**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	208-96-8	
Anthracene	**77.9**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	120-12-7	
Benzo(a)anthracene	**170**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	56-55-3	
Benzo(a)pyrene	**181**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	50-32-8	
Benzo(b)fluoranthene	**265**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	205-99-2	
Benzo(e)pyrene	**122**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	192-97-2	
Benzo(g,h,i)perylene	**127**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	191-24-2	
Benzo(k)fluoranthene	**88.2**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	207-08-9	
2-Chloronaphthalene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	91-58-7	L2
Chrysene	**205**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	53-70-3	
Dibenzofuran	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	132-64-9	
Fluoranthene	**295**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	206-44-0	
Fluorene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	86-73-7	
Indeno(1,2,3-cd)pyrene	**109**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (15cm) **Lab ID: 10281597022** Collected: 09/16/14 14:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	90-12-0	
2-Methylnaphthalene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	91-57-6	
Naphthalene	ND	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	91-20-3	
Phenanthrene	**131**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	85-01-8	
Pyrene	**252**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**258**	ug/kg	22.0	1	09/29/14 00:08	10/03/14 07:58		
Total PAHs	**2060**	ug/kg		1	09/29/14 00:08	10/03/14 07:58	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	64	%.	30-150	1	09/29/14 00:08	10/03/14 07:58	321-60-8	
Terphenyl-d14 (S)	69	%.	30-150	1	09/29/14 00:08	10/03/14 07:58	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (50cm) **Lab ID: 10281597023** Collected: 09/16/14 14:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	57.1	1	10/03/14 10:21	10/05/14 17:56	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:21	10/05/14 17:56	877-09-8	
Decachlorobiphenyl (S)	77	%.	55-130	1	10/03/14 10:21	10/05/14 17:56	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.4**	mg/kg	1.3	1	10/01/14 09:24	10/05/14 02:29	7440-38-2	
Cadmium	**0.46**	mg/kg	0.19	1	10/01/14 09:24	10/05/14 02:29	7440-43-9	
Chromium	**16.2**	mg/kg	0.65	1	10/01/14 09:24	10/05/14 02:29	7440-47-3	
Copper	**30.7**	mg/kg	0.65	1	10/01/14 09:24	10/05/14 02:29	7440-50-8	
Lead	**58.8**	mg/kg	1.3	1	10/01/14 09:24	10/05/14 02:29	7439-92-1	
Nickel	**12.6**	mg/kg	1.3	1	10/01/14 09:24	10/05/14 02:29	7440-02-0	
Zinc	**85.4**	mg/kg	1.3	1	10/01/14 09:24	10/05/14 02:29	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.28**	mg/kg	0.031	1	10/01/14 14:51	10/02/14 16:08	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**42.2**	%	0.10	1		09/26/14 16:39		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**422**	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	83-32-9	
Acenaphthylene	**212**	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	208-96-8	
Anthracene	**1050**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	120-12-7	
Benzo(a)anthracene	**1840**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	56-55-3	
Benzo(a)pyrene	**1710**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	50-32-8	
Benzo(b)fluoranthene	**2220**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	205-99-2	
Benzo(e)pyrene	**951**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	192-97-2	
Benzo(g,h,i)perylene	**932**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	191-24-2	
Benzo(k)fluoranthene	**852**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	207-08-9	
2-Chloronaphthalene	ND	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	91-58-7	L2
Chrysene	**1920**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	53-70-3	
Dibenzofuran	**465**	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	132-64-9	
Fluoranthene	**4700**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	206-44-0	
Fluorene	**692**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	86-73-7	
Indeno(1,2,3-cd)pyrene	**875**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (50cm) **Lab ID: 10281597023** Collected: 09/16/14 14:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**135**	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	90-12-0	
2-Methylnaphthalene	**198**	ug/kg	17.2	1	09/29/14 00:08	10/03/14 08:19	91-57-6	
Naphthalene	**905**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	91-20-3	
Phenanthrene	**4510**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	85-01-8	
Pyrene	**3800**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**2310**	ug/kg	172	10	09/29/14 00:08	10/04/14 02:16		
Total PAHs	**28000**	ug/kg		10	09/29/14 00:08	10/04/14 02:16	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/29/14 00:08	10/03/14 08:19	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	09/29/14 00:08	10/03/14 08:19	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (100cm) **Lab ID: 10281597024** Collected: 09/16/14 14:40 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	52.7	1	10/03/14 10:21	10/05/14 18:12	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/03/14 10:21	10/05/14 18:12	877-09-8	
Decachlorobiphenyl (S)	79	%.	55-130	1	10/03/14 10:21	10/05/14 18:12	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.2**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:32	7440-38-2	
Cadmium	ND	mg/kg	0.24	1	10/01/14 09:24	10/05/14 02:32	7440-43-9	
Chromium	**11.0**	mg/kg	0.80	1	10/01/14 09:24	10/05/14 02:32	7440-47-3	
Copper	**13.2**	mg/kg	0.80	1	10/01/14 09:24	10/05/14 02:32	7440-50-8	
Lead	**4.8**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:32	7439-92-1	
Nickel	**9.6**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:32	7440-02-0	
Zinc	**23.6**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:32	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.049**	mg/kg	0.027	1	10/01/14 14:51	10/02/14 16:10	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**37.3**	%	0.10	1		09/26/14 16:39		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	83-32-9	
Acenaphthylene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	208-96-8	
Anthracene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	120-12-7	
Benzo(a)anthracene	**23.6**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	56-55-3	
Benzo(a)pyrene	**25.2**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	50-32-8	
Benzo(b)fluoranthene	**33.1**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	205-99-2	
Benzo(e)pyrene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	192-97-2	
Benzo(g,h,i)perylene	**18.0**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	91-58-7	L2
Chrysene	**25.6**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	53-70-3	
Dibenzofuran	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	132-64-9	
Fluoranthene	**41.0**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	206-44-0	
Fluorene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1026-CH (100cm) **Lab ID: 10281597024** Collected: 09/16/14 14:40 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	91-57-6	
Naphthalene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	91-20-3	
Phenanthrene	ND	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	85-01-8	
Pyrene	**33.0**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**43.3**	ug/kg	16.0	1	09/29/14 00:08	10/03/14 08:41		
Total PAHs	**199**	ug/kg		1	09/29/14 00:08	10/03/14 08:41	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	73	%.	30-150	1	09/29/14 00:08	10/03/14 08:41	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	09/29/14 00:08	10/03/14 08:41	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (15cm) **Lab ID: 10281597025** Collected: 09/16/14 15:10 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	65.6	1	10/03/14 10:21	10/05/14 18:28	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	50-128	1	10/03/14 10:21	10/05/14 18:28	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/03/14 10:21	10/05/14 18:28	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**4.6**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:35	7440-38-2	
Cadmium	ND	mg/kg	0.28	1	10/01/14 09:24	10/05/14 02:35	7440-43-9	
Chromium	**12.9**	mg/kg	0.93	1	10/01/14 09:24	10/05/14 02:35	7440-47-3	
Copper	**21.7**	mg/kg	0.93	1	10/01/14 09:24	10/05/14 02:35	7440-50-8	
Lead	**9.5**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:35	7439-92-1	
Nickel	**13.2**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:35	7440-02-0	
Zinc	**48.0**	mg/kg	1.9	1	10/01/14 09:24	10/05/14 02:35	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.060**	mg/kg	0.037	1	10/01/14 14:51	10/02/14 16:12	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**49.7**	%	0.10	1		09/26/14 16:39		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	83-32-9	
Acenaphthylene	**51.1**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	208-96-8	
Anthracene	**121**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	120-12-7	
Benzo(a)anthracene	**178**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	56-55-3	
Benzo(a)pyrene	**177**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	50-32-8	
Benzo(b)fluoranthene	**307**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	205-99-2	
Benzo(e)pyrene	**146**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	192-97-2	
Benzo(g,h,i)perylene	**124**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	191-24-2	
Benzo(k)fluoranthene	**113**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	207-08-9	
2-Chloronaphthalene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	91-58-7	L2
Chrysene	**288**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	53-70-3	
Dibenzofuran	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	132-64-9	
Fluoranthene	**318**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	206-44-0	
Fluorene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	86-73-7	
Indeno(1,2,3-cd)pyrene	**109**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (15cm) **Lab ID: 10281597025** Collected: 09/16/14 15:10 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	90-12-0	
2-Methylnaphthalene	ND	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	91-57-6	
Naphthalene	**35.6**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	91-20-3	
Phenanthrene	**122**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	85-01-8	
Pyrene	**271**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**261**	ug/kg	19.8	1	09/29/14 00:08	10/03/14 09:03		
Total PAHs	**2360**	ug/kg		1	09/29/14 00:08	10/03/14 09:03	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	64	%.	30-150	1	09/29/14 00:08	10/03/14 09:03	321-60-8	
Terphenyl-d14 (S)	69	%.	30-150	1	09/29/14 00:08	10/03/14 09:03	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (50cm) **Lab ID: 10281597026** Collected: 09/16/14 15:15 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	69.3	1	10/03/14 10:21	10/05/14 18:44	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	83	%.	50-128	1	10/03/14 10:21	10/05/14 18:44	877-09-8	
Decachlorobiphenyl (S)	83	%.	55-130	1	10/03/14 10:21	10/05/14 18:44	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.3**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:38	7440-38-2	
Cadmium	**0.34**	mg/kg	0.25	1	10/01/14 09:24	10/05/14 02:38	7440-43-9	
Chromium	**13.5**	mg/kg	0.82	1	10/01/14 09:24	10/05/14 02:38	7440-47-3	
Copper	**22.8**	mg/kg	0.82	1	10/01/14 09:24	10/05/14 02:38	7440-50-8	
Lead	**12.9**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:38	7439-92-1	
Nickel	**15.9**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:38	7440-02-0	
Zinc	**52.6**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:38	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.13**	mg/kg	0.038	1	10/01/14 14:51	10/02/14 16:14	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**52.4**	%	0.10	1		09/26/14 16:39		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	83-32-9	
Acenaphthylene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	208-96-8	
Anthracene	**30.2**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	120-12-7	
Benzo(a)anthracene	**58.1**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	56-55-3	
Benzo(a)pyrene	**62.4**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	50-32-8	
Benzo(b)fluoranthene	**99.8**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	205-99-2	
Benzo(e)pyrene	**46.1**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	192-97-2	
Benzo(g,h,i)perylene	**45.9**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	191-24-2	
Benzo(k)fluoranthene	**36.4**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	91-58-7	L2
Chrysene	**87.6**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	53-70-3	
Dibenzofuran	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	132-64-9	
Fluoranthene	**101**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	206-44-0	
Fluorene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	86-73-7	
Indeno(1,2,3-cd)pyrene	**39.2**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (50cm) **Lab ID: 10281597026** Collected: 09/16/14 15:15 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	91-57-6	
Naphthalene	**34.4**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	91-20-3	
Phenanthrene	**35.8**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	85-01-8	
Pyrene	**82.2**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**98.4**	ug/kg	21.0	1	09/29/14 00:08	10/03/14 09:25		
Total PAHs	**759**	ug/kg		1	09/29/14 00:08	10/03/14 09:25	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 09:25	321-60-8	
Terphenyl-d14 (S)	73	%.	30-150	1	09/29/14 00:08	10/03/14 09:25	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (100cm) **Lab ID: 10281597027** Collected: 09/16/14 15:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	63.9	1	10/03/14 10:21	10/05/14 19:00	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	50-128	1	10/03/14 10:21	10/05/14 19:00	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/03/14 10:21	10/05/14 19:00	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.9**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 02:41	7440-38-2	
Cadmium	**0.39**	mg/kg	0.27	1	10/01/14 09:24	10/05/14 02:41	7440-43-9	
Chromium	**14.1**	mg/kg	0.89	1	10/01/14 09:24	10/05/14 02:41	7440-47-3	
Copper	**23.7**	mg/kg	0.89	1	10/01/14 09:24	10/05/14 02:41	7440-50-8	
Lead	**12.6**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 02:41	7439-92-1	
Nickel	**15.4**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 02:41	7440-02-0	
Zinc	**65.9**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 02:41	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.095**	mg/kg	0.035	1	10/01/14 14:51	10/02/14 16:16	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**48.3**	%	0.10	1		09/26/14 16:40		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	83-32-9	
Acenaphthylene	**29.8**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	208-96-8	
Anthracene	**54.4**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	120-12-7	
Benzo(a)anthracene	**85.3**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	56-55-3	
Benzo(a)pyrene	**93.0**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	50-32-8	
Benzo(b)fluoranthene	**154**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	205-99-2	
Benzo(e)pyrene	**74.2**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	192-97-2	
Benzo(g,h,i)perylene	**68.7**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	191-24-2	
Benzo(k)fluoranthene	**58.1**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	207-08-9	
2-Chloronaphthalene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	91-58-7	L2
Chrysene	**126**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	53-70-3	
Dibenzofuran	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	132-64-9	
Fluoranthene	**163**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	206-44-0	
Fluorene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	86-73-7	
Indeno(1,2,3-cd)pyrene	**59.1**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (100cm) **Lab ID: 10281597027** Collected: 09/16/14 15:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	90-12-0	
2-Methylnaphthalene	ND	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	91-57-6	
Naphthalene	**37.3**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	91-20-3	
Phenanthrene	**50.4**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	85-01-8	
Pyrene	**136**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**141**	ug/kg	19.3	1	09/29/14 00:08	10/03/14 09:47		
Total PAHs	**1190**	ug/kg		1	09/29/14 00:08	10/03/14 09:47	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	09/29/14 00:08	10/03/14 09:47	321-60-8	
Terphenyl-d14 (S)	66	%.	30-150	1	09/29/14 00:08	10/03/14 09:47	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (200cm) **Lab ID: 10281597028** Collected: 09/16/14 15:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.0	1	10/03/14 10:21	10/05/14 19:16	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	50-128	1	10/03/14 10:21	10/05/14 19:16	877-09-8	
Decachlorobiphenyl (S)	77	%.	55-130	1	10/03/14 10:21	10/05/14 19:16	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.7**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 02:44	7440-38-2	
Cadmium	ND	mg/kg	0.16	1	10/01/14 09:24	10/05/14 02:44	7440-43-9	
Chromium	**7.4**	mg/kg	0.52	1	10/01/14 09:24	10/05/14 02:44	7440-47-3	
Copper	**6.0**	mg/kg	0.52	1	10/01/14 09:24	10/05/14 02:44	7440-50-8	
Lead	**2.6**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 02:44	7439-92-1	
Nickel	**7.5**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 02:44	7440-02-0	
Zinc	**16.1**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 02:44	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.023	1	10/01/14 14:51	10/02/14 16:22	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**24.9**	%	0.10	1		09/26/14 16:40		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	83-32-9	
Acenaphthylene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	208-96-8	
Anthracene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	50-32-8	
Benzo(b)fluoranthene	**13.6**	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	205-99-2	
Benzo(e)pyrene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	91-58-7	L2
Chrysene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	53-70-3	
Dibenzofuran	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	132-64-9	
Fluoranthene	**21.3**	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	206-44-0	
Fluorene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1028-CH (200cm) **Lab ID: 10281597028** Collected: 09/16/14 15:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	90-12-0	
2-Methylnaphthalene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	91-57-6	
Naphthalene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	91-20-3	
Phenanthrene	ND	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	85-01-8	
Pyrene	**16.6**	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**26.3**	ug/kg	13.3	1	09/29/14 00:08	10/03/14 10:09		
Total PAHs	**51.5**	ug/kg		1	09/29/14 00:08	10/03/14 10:09	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/29/14 00:08	10/03/14 10:09	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	09/29/14 00:08	10/03/14 10:09	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (15cm) **Lab ID: 10281597029** Collected: 09/16/14 16:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	69.7	1	10/03/14 10:21	10/05/14 19:32	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	77	%.	50-128	1	10/03/14 10:21	10/05/14 19:32	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:21	10/05/14 19:32	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.5**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:47	7440-38-2	
Cadmium	**0.31**	mg/kg	0.24	1	10/01/14 09:24	10/05/14 02:47	7440-43-9	
Chromium	**13.1**	mg/kg	0.79	1	10/01/14 09:24	10/05/14 02:47	7440-47-3	
Copper	**26.7**	mg/kg	0.79	1	10/01/14 09:24	10/05/14 02:47	7440-50-8	
Lead	**16.0**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:47	7439-92-1	
Nickel	**19.1**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:47	7440-02-0	
Zinc	**53.4**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 02:47	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.095**	mg/kg	0.039	1	10/01/14 14:51	10/02/14 16:24	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**53.0**	%	0.10	1		09/26/14 16:40		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	83-32-9	
Acenaphthylene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	208-96-8	
Anthracene	**34.2**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	120-12-7	
Benzo(a)anthracene	**76.6**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	56-55-3	
Benzo(a)pyrene	**69.7**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	50-32-8	
Benzo(b)fluoranthene	**116**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	205-99-2	
Benzo(e)pyrene	**55.2**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	192-97-2	
Benzo(g,h,i)perylene	**48.1**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	191-24-2	
Benzo(k)fluoranthene	**43.5**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	91-58-7	L2
Chrysene	**93.5**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	53-70-3	
Dibenzofuran	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	132-64-9	
Fluoranthene	**155**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	206-44-0	
Fluorene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	86-73-7	
Indeno(1,2,3-cd)pyrene	**40.1**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (15cm) **Lab ID: 10281597029** Collected: 09/16/14 16:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	91-57-6	
Naphthalene	**28.3**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	91-20-3	
Phenanthrene	**48.7**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	85-01-8	
Pyrene	**130**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**110**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 10:31		
Total PAHs	**940**	ug/kg		1	09/29/14 00:08	10/03/14 10:31	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 10:31	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	09/29/14 00:08	10/03/14 10:31	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (50cm) **Lab ID: 10281597030** Collected: 09/16/14 16:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	79.9	1	10/03/14 10:21	10/05/14 19:48	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	64	%.	50-128	1	10/03/14 10:21	10/05/14 19:48	877-09-8	
Decachlorobiphenyl (S)	69	%.	55-130	1	10/03/14 10:21	10/05/14 19:48	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**10.1**	mg/kg	2.3	1	10/01/14 09:24	10/05/14 02:56	7440-38-2	
Cadmium	ND	mg/kg	0.35	1	10/01/14 09:24	10/05/14 02:56	7440-43-9	
Chromium	**10.9**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 02:56	7440-47-3	
Copper	**21.5**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 02:56	7440-50-8	
Lead	**11.0**	mg/kg	2.3	1	10/01/14 09:24	10/05/14 02:56	7439-92-1	
Nickel	**13.0**	mg/kg	2.3	1	10/01/14 09:24	10/05/14 02:56	7440-02-0	
Zinc	**41.7**	mg/kg	2.3	1	10/01/14 09:24	10/05/14 02:56	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.12**	mg/kg	0.049	1	10/01/14 14:51	10/02/14 16:26	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**59.0**	%	0.10	1		09/26/14 16:41		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	83-32-9	
Acenaphthylene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	208-96-8	
Anthracene	**42.9**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	120-12-7	
Benzo(a)anthracene	**55.3**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	56-55-3	
Benzo(a)pyrene	**53.6**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	50-32-8	
Benzo(b)fluoranthene	**72.5**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	205-99-2	
Benzo(e)pyrene	**33.7**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	192-97-2	
Benzo(g,h,i)perylene	**33.8**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	191-24-2	
Benzo(k)fluoranthene	**27.1**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	207-08-9	
2-Chloronaphthalene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	91-58-7	L2
Chrysene	**88.8**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	53-70-3	
Dibenzofuran	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	132-64-9	
Fluoranthene	**78.1**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	206-44-0	
Fluorene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	86-73-7	
Indeno(1,2,3-cd)pyrene	**27.7**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (50cm) **Lab ID: 10281597030** Collected: 09/16/14 16:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	90-12-0	
2-Methylnaphthalene	ND	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	91-57-6	
Naphthalene	**58.5**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	91-20-3	
Phenanthrene	**25.3**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	85-01-8	
Pyrene	**65.8**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**86.4**	ug/kg	24.4	1	09/29/14 00:08	10/03/14 10:53		
Total PAHs	**663**	ug/kg		1	09/29/14 00:08	10/03/14 10:53	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	69	%.	30-150	1	09/29/14 00:08	10/03/14 10:53	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	09/29/14 00:08	10/03/14 10:53	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (100cm) **Lab ID: 10281597031** Collected: 09/16/14 16:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	77.9	1	10/03/14 10:21	10/05/14 20:04	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	71	%.	50-128	1	10/03/14 10:21	10/05/14 20:04	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:21	10/05/14 20:04	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**14.1**	mg/kg	2.0	1	10/01/14 09:24	10/05/14 02:59	7440-38-2	
Cadmium	**0.67**	mg/kg	0.30	1	10/01/14 09:24	10/05/14 02:59	7440-43-9	
Chromium	**12.5**	mg/kg	0.99	1	10/01/14 09:24	10/05/14 02:59	7440-47-3	
Copper	**19.6**	mg/kg	0.99	1	10/01/14 09:24	10/05/14 02:59	7440-50-8	
Lead	**12.8**	mg/kg	2.0	1	10/01/14 09:24	10/05/14 02:59	7439-92-1	
Nickel	**15.6**	mg/kg	2.0	1	10/01/14 09:24	10/05/14 02:59	7440-02-0	
Zinc	**58.4**	mg/kg	2.0	1	10/01/14 09:24	10/05/14 02:59	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.20**	mg/kg	0.040	1	10/01/14 14:51	10/02/14 16:29	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**57.6**	%	0.10	1		09/26/14 16:41		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	83-32-9	
Acenaphthylene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	208-96-8	
Anthracene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	120-12-7	
Benzo(a)anthracene	**86.4**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	56-55-3	
Benzo(a)pyrene	**95.1**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	50-32-8	
Benzo(b)fluoranthene	**128**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	205-99-2	
Benzo(e)pyrene	**56.9**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	192-97-2	
Benzo(g,h,i)perylene	**57.8**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	191-24-2	
Benzo(k)fluoranthene	**43.6**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	207-08-9	
2-Chloronaphthalene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	91-58-7	L2
Chrysene	**94.8**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	53-70-3	
Dibenzofuran	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	132-64-9	
Fluoranthene	**133**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	206-44-0	
Fluorene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	86-73-7	
Indeno(1,2,3-cd)pyrene	**49.9**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (100cm) **Lab ID: 10281597031** Collected: 09/16/14 16:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	90-12-0	
2-Methylnaphthalene	**31.4**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	91-57-6	
Naphthalene	**228**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	91-20-3	
Phenanthrene	**38.9**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	85-01-8	
Pyrene	**113**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**140**	ug/kg	23.5	1	09/29/14 00:08	10/03/14 11:15		
Total PAHs	**1130**	ug/kg		1	09/29/14 00:08	10/03/14 11:15	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/29/14 00:08	10/03/14 11:15	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	09/29/14 00:08	10/03/14 11:15	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (200cm) **Lab ID: 10281597032** Collected: 09/16/14 16:35 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	76.9	1	10/03/14 10:21	10/05/14 20:20	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:21	10/05/14 20:20	877-09-8	
Decachlorobiphenyl (S)	73	%.	55-130	1	10/03/14 10:21	10/05/14 20:20	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**10.8**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 03:02	7440-38-2	
Cadmium	**0.33**	mg/kg	0.25	1	10/01/14 09:24	10/05/14 03:02	7440-43-9	
Chromium	**13.1**	mg/kg	0.82	1	10/01/14 09:24	10/05/14 03:02	7440-47-3	
Copper	**25.9**	mg/kg	0.82	1	10/01/14 09:24	10/05/14 03:02	7440-50-8	
Lead	**14.8**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 03:02	7439-92-1	
Nickel	**17.4**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 03:02	7440-02-0	
Zinc	**52.8**	mg/kg	1.6	1	10/01/14 09:24	10/05/14 03:02	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.16**	mg/kg	0.039	1	10/01/14 14:51	10/02/14 16:31	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**57.1**	%	0.10	1		09/26/14 17:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	83-32-9	
Acenaphthylene	**24.0**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	208-96-8	
Anthracene	**42.5**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	120-12-7	
Benzo(a)anthracene	**81.5**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	56-55-3	
Benzo(a)pyrene	**93.0**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	50-32-8	
Benzo(b)fluoranthene	**137**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	205-99-2	
Benzo(e)pyrene	**66.6**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	192-97-2	
Benzo(g,h,i)perylene	**67.3**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	191-24-2	
Benzo(k)fluoranthene	**53.7**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	207-08-9	
2-Chloronaphthalene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	91-58-7	L2
Chrysene	**107**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	53-70-3	
Dibenzofuran	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	132-64-9	
Fluoranthene	**132**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	206-44-0	
Fluorene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**57.4**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1027-CH (200cm) **Lab ID: 10281597032** Collected: 09/16/14 16:35 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	90-12-0	
2-Methylnaphthalene	ND	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	91-57-6	
Naphthalene	**89.9**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	91-20-3	
Phenanthrene	**50.7**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	85-01-8	
Pyrene	**115**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**140**	ug/kg	23.3	1	09/29/14 00:08	10/03/14 11:37		
Total PAHs	**1120**	ug/kg		1	09/29/14 00:08	10/03/14 11:37	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 11:37	321-60-8	
Terphenyl-d14 (S)	73	%.	30-150	1	09/29/14 00:08	10/03/14 11:37	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: EB-02-CH **Lab ID: 10281597033** Collected: 09/16/14 17:00 Received: 09/17/14 18:27 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510							
Acenaphthene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	83-32-9	
Acenaphthylene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	208-96-8	
Anthracene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	207-08-9	
Chrysene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	53-70-3	
Fluoranthene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	206-44-0	
Fluorene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	193-39-5	
Naphthalene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	91-20-3	
Phenanthrene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	85-01-8	
Pyrene	ND	ug/L	0.044	1	09/23/14 16:44	10/01/14 06:47	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	76	%.	54-125	1	09/23/14 16:44	10/01/14 06:47	321-60-8	
Terphenyl-d14 (S)	80	%.	68-125	1	09/23/14 16:44	10/01/14 06:47	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (15cm) **Lab ID: 10281597034** Collected: 09/17/14 08:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.6	1	10/03/14 10:21	10/05/14 20:36	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	50-128	1	10/03/14 10:21	10/05/14 20:36	877-09-8	
Decachlorobiphenyl (S)	80	%.	55-130	1	10/03/14 10:21	10/05/14 20:36	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.6**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:05	7440-38-2	
Cadmium	**0.29**	mg/kg	0.16	1	10/01/14 09:24	10/05/14 03:05	7440-43-9	
Chromium	**9.5**	mg/kg	0.55	1	10/01/14 09:24	10/05/14 03:05	7440-47-3	
Copper	**7.3**	mg/kg	0.55	1	10/01/14 09:24	10/05/14 03:05	7440-50-8	
Lead	**7.6**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:05	7439-92-1	
Nickel	**8.3**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:05	7440-02-0	
Zinc	**42.2**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:05	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.049**	mg/kg	0.024	1	10/01/14 14:51	10/02/14 16:33	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**26.3**	%	0.10	1		09/26/14 17:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**22.7**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	83-32-9	
Acenaphthylene	ND	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	208-96-8	
Anthracene	**65.4**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	120-12-7	
Benzo(a)anthracene	**117**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	56-55-3	
Benzo(a)pyrene	**110**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	50-32-8	
Benzo(b)fluoranthene	**149**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	205-99-2	
Benzo(e)pyrene	**72.5**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	192-97-2	
Benzo(g,h,i)perylene	**74.4**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	191-24-2	
Benzo(k)fluoranthene	**49.3**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	91-58-7	L2
Chrysene	**126**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	53-70-3	
Dibenzofuran	**15.7**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	132-64-9	
Fluoranthene	**259**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	206-44-0	
Fluorene	**32.1**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	86-73-7	
Indeno(1,2,3-cd)pyrene	**60.6**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (15cm) **Lab ID: 10281597034** Collected: 09/17/14 08:20 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	90-12-0	
2-Methylnaphthalene	**13.6**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	91-57-6	
Naphthalene	**21.7**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	91-20-3	
Phenanthrene	**198**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	85-01-8	
Pyrene	**232**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**156**	ug/kg	13.5	1	09/29/14 00:08	10/03/14 11:59		
Total PAHs	**1610**	ug/kg		1	09/29/14 00:08	10/03/14 11:59	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 11:59	321-60-8	
Terphenyl-d14 (S)	72	%.	30-150	1	09/29/14 00:08	10/03/14 11:59	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (50cm) **Lab ID: 10281597035** Collected: 09/17/14 08:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.2	1	10/03/14 10:21	10/05/14 20:51	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:21	10/05/14 20:51	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:21	10/05/14 20:51	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.3**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:08	7440-38-2	
Cadmium	ND	mg/kg	0.18	1	10/01/14 09:24	10/05/14 03:08	7440-43-9	
Chromium	**7.6**	mg/kg	0.60	1	10/01/14 09:24	10/05/14 03:08	7440-47-3	
Copper	**5.2**	mg/kg	0.60	1	10/01/14 09:24	10/05/14 03:08	7440-50-8	
Lead	**4.8**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:08	7439-92-1	
Nickel	**7.3**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:08	7440-02-0	
Zinc	**25.8**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:08	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.029**	mg/kg	0.024	1	10/01/14 14:51	10/02/14 16:35	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.0**	%	0.10	1		09/26/14 17:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	83-32-9	
Acenaphthylene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	208-96-8	
Anthracene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	120-12-7	
Benzo(a)anthracene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	56-55-3	
Benzo(a)pyrene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	50-32-8	
Benzo(b)fluoranthene	**14.5**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	205-99-2	
Benzo(e)pyrene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	91-58-7	L2
Chrysene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	53-70-3	
Dibenzofuran	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	132-64-9	
Fluoranthene	**14.7**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	206-44-0	
Fluorene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (50cm) **Lab ID: 10281597035** Collected: 09/17/14 08:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	91-57-6	
Naphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	91-20-3	
Phenanthrene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	85-01-8	
Pyrene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**24.8**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 12:21		
Total PAHs	**29.2**	ug/kg		1	09/29/14 00:08	10/03/14 12:21	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 12:21	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	09/29/14 00:08	10/03/14 12:21	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (100cm) **Lab ID: 10281597036** Collected: 09/17/14 08:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:07	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	50-128	1	10/03/14 10:21	10/05/14 21:07	877-09-8	
Decachlorobiphenyl (S)	81	%.	55-130	1	10/03/14 10:21	10/05/14 21:07	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.7**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:11	7440-38-2	
Cadmium	ND	mg/kg	0.17	1	10/01/14 09:24	10/05/14 03:11	7440-43-9	
Chromium	**7.8**	mg/kg	0.57	1	10/01/14 09:24	10/05/14 03:11	7440-47-3	
Copper	**4.3**	mg/kg	0.57	1	10/01/14 09:24	10/05/14 03:11	7440-50-8	
Lead	**2.6**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:11	7439-92-1	
Nickel	**6.9**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:11	7440-02-0	
Zinc	**13.6**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:11	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.026	1	10/01/14 14:51	10/02/14 16:37	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**22.4**	%	0.10	1		09/26/14 17:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	83-32-9	
Acenaphthylene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	208-96-8	
Anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	205-99-2	
Benzo(e)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	91-58-7	L2
Chrysene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	53-70-3	
Dibenzofuran	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	132-64-9	
Fluoranthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	206-44-0	
Fluorene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (100cm) **Lab ID: 10281597036** Collected: 09/17/14 08:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	91-57-6	
Naphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	91-20-3	
Phenanthrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	85-01-8	
Pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**25.4**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 12:43		
Total PAHs	**0.0000000043**	ug/kg		1	09/29/14 00:08	10/03/14 12:43	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	09/29/14 00:08	10/03/14 12:43	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	09/29/14 00:08	10/03/14 12:43	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (200cm) **Lab ID: 10281597037** Collected: 09/17/14 08:35 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.5	1	10/03/14 10:21	10/05/14 21:23	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	50-128	1	10/03/14 10:21	10/05/14 21:23	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/03/14 10:21	10/05/14 21:23	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.8**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 03:14	7440-38-2	
Cadmium	ND	mg/kg	0.16	1	10/01/14 09:24	10/05/14 03:14	7440-43-9	
Chromium	**8.6**	mg/kg	0.52	1	10/01/14 09:24	10/05/14 03:14	7440-47-3	
Copper	**6.5**	mg/kg	0.52	1	10/01/14 09:24	10/05/14 03:14	7440-50-8	
Lead	**4.7**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 03:14	7439-92-1	
Nickel	**8.0**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 03:14	7440-02-0	
Zinc	**25.2**	mg/kg	1.0	1	10/01/14 09:24	10/05/14 03:14	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.023**	mg/kg	0.023	1	10/01/14 14:51	10/02/14 16:39	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**22.6**	%	0.10	1		09/26/14 17:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	83-32-9	
Acenaphthylene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	208-96-8	
Anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	50-32-8	
Benzo(b)fluoranthene	**16.0**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	205-99-2	
Benzo(e)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	91-58-7	L2
Chrysene	**14.3**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	53-70-3	
Dibenzofuran	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	132-64-9	
Fluoranthene	**21.4**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	206-44-0	
Fluorene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1029-CH (200cm) **Lab ID: 10281597037** Collected: 09/17/14 08:35 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	91-57-6	
Naphthalene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	91-20-3	
Phenanthrene	ND	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	85-01-8	
Pyrene	**17.0**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**25.7**	ug/kg	12.9	1	09/29/14 00:08	10/03/14 13:05		
Total PAHs	**68.7**	ug/kg		1	09/29/14 00:08	10/03/14 13:05	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	66	%.	30-150	1	09/29/14 00:08	10/03/14 13:05	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	09/29/14 00:08	10/03/14 13:05	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1042-CH (15cm) **Lab ID: 10281597038** Collected: 09/17/14 09:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	11097-69-1	
PCB-1260 (Aroclor 1260)	**124**	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	47.9	1	10/03/14 10:21	10/05/14 22:11	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:21	10/05/14 22:11	877-09-8	
Decachlorobiphenyl (S)	79	%.	55-130	1	10/03/14 10:21	10/05/14 22:11	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.9**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:17	7440-38-2	
Cadmium	**1.4**	mg/kg	0.16	1	10/01/14 09:24	10/05/14 03:17	7440-43-9	
Chromium	**23.8**	mg/kg	0.54	1	10/01/14 09:24	10/05/14 03:17	7440-47-3	
Copper	**23.8**	mg/kg	0.54	1	10/01/14 09:24	10/05/14 03:17	7440-50-8	
Lead	**26.5**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:17	7439-92-1	
Nickel	**17.0**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:17	7440-02-0	
Zinc	**83.1**	mg/kg	1.1	1	10/01/14 09:24	10/05/14 03:17	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.13**	mg/kg	0.027	1	10/01/14 14:51	10/02/14 16:45	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**31.6**	%	0.10	1		09/26/14 17:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**25.1**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	83-32-9	
Acenaphthylene	**22.9**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	208-96-8	
Anthracene	**85.2**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	120-12-7	
Benzo(a)anthracene	**264**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	56-55-3	
Benzo(a)pyrene	**287**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	50-32-8	
Benzo(b)fluoranthene	**437**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	205-99-2	
Benzo(e)pyrene	**220**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	192-97-2	
Benzo(g,h,i)perylene	**230**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	191-24-2	
Benzo(k)fluoranthene	**161**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	207-08-9	
2-Chloronaphthalene	ND	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	91-58-7	L2
Chrysene	**376**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	53-70-3	
Dibenzofuran	**15.4**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	132-64-9	
Fluoranthene	**657**	ug/kg	73.1	5	09/29/14 00:08	10/04/14 02:38	206-44-0	
Fluorene	**30.8**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	86-73-7	
Indeno(1,2,3-cd)pyrene	**188**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1042-CH (15cm) **Lab ID: 10281597038** Collected: 09/17/14 09:25 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	90-12-0	
2-Methylnaphthalene	**14.9**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	91-57-6	
Naphthalene	ND	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	91-20-3	
Phenanthrene	**236**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27	85-01-8	
Pyrene	**556**	ug/kg	73.1	5	09/29/14 00:08	10/04/14 02:38	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**404**	ug/kg	14.6	1	09/29/14 00:08	10/03/14 13:27		
Total PAHs	**3790**	ug/kg		5	09/29/14 00:08	10/04/14 02:38	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	73	%.	30-150	1	09/29/14 00:08	10/03/14 13:27	321-60-8	
Terphenyl-d14 (S)	79	%.	30-150	1	09/29/14 00:08	10/03/14 13:27	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1042-CH (50cm) **Lab ID: 10281597039** Collected: 09/17/14 09:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.1	1	10/03/14 10:21	10/05/14 22:27	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	50-128	1	10/03/14 10:21	10/05/14 22:27	877-09-8	
Decachlorobiphenyl (S)	71	%.	55-130	1	10/03/14 10:21	10/05/14 22:27	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.5**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:20	7440-38-2	R1
Cadmium	**0.21**	mg/kg	0.18	1	10/01/14 09:24	10/05/14 03:20	7440-43-9	R1
Chromium	**7.7**	mg/kg	0.60	1	10/01/14 09:24	10/05/14 03:20	7440-47-3	
Copper	**6.3**	mg/kg	0.60	1	10/01/14 09:24	10/05/14 03:20	7440-50-8	R1
Lead	**5.9**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:20	7439-92-1	R1
Nickel	**7.5**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:20	7440-02-0	R1
Zinc	**23.2**	mg/kg	1.2	1	10/01/14 09:24	10/05/14 03:20	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.025**	mg/kg	0.021	1	10/01/14 14:51	10/02/14 16:47	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.3**	%	0.10	1		09/26/14 17:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	83-32-9	
Acenaphthylene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	208-96-8	
Anthracene	**16.4**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	120-12-7	
Benzo(a)anthracene	**53.8**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	56-55-3	M1
Benzo(a)pyrene	**55.9**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	50-32-8	M1
Benzo(b)fluoranthene	**91.7**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	205-99-2	M1
Benzo(e)pyrene	**42.5**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	192-97-2	M1
Benzo(g,h,i)perylene	**43.7**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	191-24-2	
Benzo(k)fluoranthene	**29.3**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	91-58-7	L2
Chrysene	**70.2**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	218-01-9	M1
Dibenz(a,h)anthracene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	53-70-3	
Dibenzofuran	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	132-64-9	
Fluoranthene	**113**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	206-44-0	M1
Fluorene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	86-73-7	
Indeno(1,2,3-cd)pyrene	**35.9**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1042-CH (50cm) **Lab ID: 10281597039** Collected: 09/17/14 09:30 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	91-57-6	
Naphthalene	ND	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	91-20-3	
Phenanthrene	**41.8**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	85-01-8	M1
Pyrene	**94.7**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49	129-00-0	M1
Total BaP Eq. MN 2006sh. ND=RL	**84.7**	ug/kg	12.5	1	09/29/14 00:08	10/03/14 13:49		
Total PAHs	**689**	ug/kg		1	09/29/14 00:08	10/03/14 13:49	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	09/29/14 00:08	10/03/14 13:49	321-60-8	
Terphenyl-d14 (S)	70	%.	30-150	1	09/29/14 00:08	10/03/14 13:49	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (15cm) **Lab ID: 10281597040** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	69.5	1	10/03/14 10:21	10/05/14 22:43	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	50-128	1	10/03/14 10:21	10/05/14 22:43	877-09-8	
Decachlorobiphenyl (S)	80	%.	55-130	1	10/03/14 10:21	10/05/14 22:43	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**4.2**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 03:41	7440-38-2	
Cadmium	**0.37**	mg/kg	0.27	1	10/01/14 09:24	10/05/14 03:41	7440-43-9	
Chromium	**27.7**	mg/kg	0.89	1	10/01/14 09:24	10/05/14 03:41	7440-47-3	
Copper	**20.7**	mg/kg	0.89	1	10/01/14 09:24	10/05/14 03:41	7440-50-8	
Lead	**17.2**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 03:41	7439-92-1	
Nickel	**21.5**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 03:41	7440-02-0	
Zinc	**97.8**	mg/kg	1.8	1	10/01/14 09:24	10/05/14 03:41	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.13**	mg/kg	0.042	1	10/01/14 14:51	10/02/14 16:54	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**52.5**	%	0.10	1		09/26/14 17:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	83-32-9	
Acenaphthylene	**28.9**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	208-96-8	
Anthracene	**75.1**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	120-12-7	
Benzo(a)anthracene	**149**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	56-55-3	
Benzo(a)pyrene	**163**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	50-32-8	
Benzo(b)fluoranthene	**233**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	205-99-2	
Benzo(e)pyrene	**111**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	192-97-2	
Benzo(g,h,i)perylene	**110**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	191-24-2	
Benzo(k)fluoranthene	**82.2**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	91-58-7	L2
Chrysene	**181**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	53-70-3	
Dibenzofuran	ND	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	132-64-9	
Fluoranthene	**270**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	206-44-0	
Fluorene	**24.2**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	86-73-7	
Indeno(1,2,3-cd)pyrene	**93.4**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (15cm) **Lab ID: 10281597040** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	90-12-0	
2-Methylnaphthalene	**24.4**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	91-57-6	
Naphthalene	**76.3**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	91-20-3	
Phenanthrene	**92.6**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	85-01-8	
Pyrene	**228**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**233**	ug/kg	21.1	1	09/29/14 00:08	10/03/14 14:55		
Total PAHs	**1920**	ug/kg		1	09/29/14 00:08	10/03/14 14:55	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	63	%.	30-150	1	09/29/14 00:08	10/03/14 14:55	321-60-8	
Terphenyl-d14 (S)	64	%.	30-150	1	09/29/14 00:08	10/03/14 14:55	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (50cm) **Lab ID: 10281597041** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	70.5	1	10/03/14 10:21	10/05/14 22:59	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	50-128	1	10/03/14 10:21	10/05/14 22:59	877-09-8	
Decachlorobiphenyl (S)	81	%.	55-130	1	10/03/14 10:21	10/05/14 22:59	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.1**	mg/kg	1.5	1	10/01/14 09:24	10/05/14 03:44	7440-38-2	
Cadmium	**0.62**	mg/kg	0.23	1	10/01/14 09:24	10/05/14 03:44	7440-43-9	
Chromium	**28.1**	mg/kg	0.77	1	10/01/14 09:24	10/05/14 03:44	7440-47-3	
Copper	**25.3**	mg/kg	0.77	1	10/01/14 09:24	10/05/14 03:44	7440-50-8	
Lead	**30.7**	mg/kg	1.5	1	10/01/14 09:24	10/05/14 03:44	7439-92-1	
Nickel	**22.2**	mg/kg	1.5	1	10/01/14 09:24	10/05/14 03:44	7440-02-0	
Zinc	**145**	mg/kg	1.5	1	10/01/14 09:24	10/05/14 03:44	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.40**	mg/kg	0.036	1	10/01/14 14:51	10/02/14 16:56	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**53.2**	%	0.10	1		09/26/14 17:08		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	83-32-9	
Acenaphthylene	**43.6**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	208-96-8	
Anthracene	**88.1**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	120-12-7	
Benzo(a)anthracene	**268**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	56-55-3	
Benzo(a)pyrene	**292**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	50-32-8	
Benzo(b)fluoranthene	**356**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	205-99-2	
Benzo(e)pyrene	**183**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	192-97-2	
Benzo(g,h,i)perylene	**187**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	191-24-2	
Benzo(k)fluoranthene	**146**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	91-58-7	L2
Chrysene	**298**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	53-70-3	
Dibenzofuran	ND	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	132-64-9	
Fluoranthene	**421**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	206-44-0	
Fluorene	**31.1**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	86-73-7	
Indeno(1,2,3-cd)pyrene	**153**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (50cm) **Lab ID: 10281597041** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**24.4**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	90-12-0	
2-Methylnaphthalene	**41.8**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	91-57-6	
Naphthalene	**131**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	91-20-3	
Phenanthrene	**156**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	85-01-8	
Pyrene	**355**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**400**	ug/kg	21.3	1	09/29/14 00:08	10/03/14 15:17		
Total PAHs	**3110**	ug/kg		1	09/29/14 00:08	10/03/14 15:17	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	09/29/14 00:08	10/03/14 15:17	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	09/29/14 00:08	10/03/14 15:17	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (100cm) **Lab ID: 10281597042** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	73.1	1	10/03/14 10:22	10/05/14 01:41	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	50-128	1	10/03/14 10:22	10/05/14 01:41	877-09-8	
Decachlorobiphenyl (S)	83	%.	55-130	1	10/03/14 10:22	10/05/14 01:41	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.4**	mg/kg	1.7	1	10/01/14 09:24	10/05/14 03:47	7440-38-2	
Cadmium	**0.84**	mg/kg	0.25	1	10/01/14 09:24	10/05/14 03:47	7440-43-9	
Chromium	**28.8**	mg/kg	0.83	1	10/01/14 09:24	10/05/14 03:47	7440-47-3	
Copper	**31.8**	mg/kg	0.83	1	10/01/14 09:24	10/05/14 03:47	7440-50-8	
Lead	**47.6**	mg/kg	1.7	1	10/01/14 09:24	10/05/14 03:47	7439-92-1	
Nickel	**22.3**	mg/kg	1.7	1	10/01/14 09:24	10/05/14 03:47	7440-02-0	
Zinc	**212**	mg/kg	1.7	1	10/01/14 09:24	10/05/14 03:47	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.30**	mg/kg	0.044	1	10/01/14 14:51	10/02/14 16:58	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**54.9**	%	0.10	1		09/26/14 17:08		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	83-32-9	
Acenaphthylene	**43.1**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	208-96-8	
Anthracene	**68.8**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	120-12-7	
Benzo(a)anthracene	**229**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	56-55-3	
Benzo(a)pyrene	**261**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	50-32-8	
Benzo(b)fluoranthene	**321**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	205-99-2	
Benzo(e)pyrene	**169**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	192-97-2	
Benzo(g,h,i)perylene	**169**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	191-24-2	
Benzo(k)fluoranthene	**106**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	207-08-9	
2-Chloronaphthalene	ND	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	91-58-7	L2
Chrysene	**261**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	53-70-3	
Dibenzofuran	ND	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	132-64-9	
Fluoranthene	**362**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	206-44-0	
Fluorene	**25.9**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**138**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1010-CH (100cm) **Lab ID: 10281597042** Collected: 09/17/14 00:00 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	90-12-0	
2-Methylnaphthalene	**32.2**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	91-57-6	
Naphthalene	**103**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	91-20-3	
Phenanthrene	**128**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	85-01-8	
Pyrene	**296**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**355**	ug/kg	22.1	1	09/29/14 00:08	10/03/14 15:39		
Total PAHs	**2680**	ug/kg		1	09/29/14 00:08	10/03/14 15:39	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	63	%.	30-150	1	09/29/14 00:08	10/03/14 15:39	321-60-8	
Terphenyl-d14 (S)	66	%.	30-150	1	09/29/14 00:08	10/03/14 15:39	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1001-CH (15cm) **Lab ID: 10281597043** Collected: 09/17/14 11:50 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	67.5	1	10/03/14 10:22	10/05/14 02:29	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	80	%.	50-128	1	10/03/14 10:22	10/05/14 02:29	877-09-8	
Decachlorobiphenyl (S)	79	%.	55-130	1	10/03/14 10:22	10/05/14 02:29	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.7**	mg/kg	1.8	1	09/27/14 13:04	09/30/14 02:19	7440-38-2	
Cadmium	**0.39**	mg/kg	0.27	1	09/27/14 13:04	09/30/14 02:19	7440-43-9	
Chromium	**26.6**	mg/kg	0.89	1	09/27/14 13:04	09/30/14 02:19	7440-47-3	
Copper	**18.5**	mg/kg	0.89	1	09/27/14 13:04	09/30/14 02:19	7440-50-8	
Lead	**18.4**	mg/kg	1.8	1	09/27/14 13:04	09/30/14 02:19	7439-92-1	
Nickel	**20.7**	mg/kg	1.8	1	09/27/14 13:04	09/30/14 02:19	7440-02-0	
Zinc	**95.0**	mg/kg	1.8	1	09/27/14 13:04	09/30/14 02:19	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.13**	mg/kg	0.034	1	09/23/14 12:25	09/23/14 14:28	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**51.1**	%	0.10	1		09/26/14 17:08		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	83-32-9	H2
Acenaphthylene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	208-96-8	H2
Anthracene	**29.1**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	120-12-7	H2
Benzo(a)anthracene	**74.8**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	56-55-3	H2,M1
Benzo(a)pyrene	**85.4**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	50-32-8	H2,M1
Benzo(b)fluoranthene	**124**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	205-99-2	H2,M1, R1
Benzo(e)pyrene	**57.8**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	192-97-2	H2,M1
Benzo(g,h,i)perylene	**56.0**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	191-24-2	H2,M1
Benzo(k)fluoranthene	**43.2**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	207-08-9	H2,M1, R1
2-Chloronaphthalene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	91-58-7	H2
Chrysene	**87.8**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	218-01-9	H2,M1, R1
Dibenz(a,h)anthracene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	53-70-3	H2
Dibenzofuran	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	132-64-9	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1001-CH (15cm) **Lab ID: 10281597043** Collected: 09/17/14 11:50 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Fluoranthene	**129**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	206-44-0	H2,M1, R1
Fluorene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**49.0**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	193-39-5	H2
1-Methylnaphthalene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	91-57-6	H2
Naphthalene	ND	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	91-20-3	H2,R1
Phenanthrene	**35.4**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	85-01-8	H2
Pyrene	**107**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20	129-00-0	H2,M1, R1
Total BaP Eq. MN 2006sh. ND=RL	**127**	ug/kg	20.4	1	10/08/14 14:05	10/08/14 20:20		
Total PAHs	**878**	ug/kg		1	10/08/14 14:05	10/08/14 20:20	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	72	%.	30-150	1	10/08/14 14:05	10/08/14 20:20	321-60-8	
Terphenyl-d14 (S)	83	%.	30-150	1	10/08/14 14:05	10/08/14 20:20	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1001-CH (50cm) **Lab ID: 10281597044** Collected: 09/17/14 11:55 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	65.8	1	10/03/14 10:22	10/05/14 02:45	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	62	%.	50-128	1	10/03/14 10:22	10/05/14 02:45	877-09-8	
Decachlorobiphenyl (S)	69	%.	55-130	1	10/03/14 10:22	10/05/14 02:45	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.9**	mg/kg	1.9	1	09/27/14 13:04	09/30/14 02:24	7440-38-2	
Cadmium	**0.42**	mg/kg	0.28	1	09/27/14 13:04	09/30/14 02:24	7440-43-9	
Chromium	**30.8**	mg/kg	0.93	1	09/27/14 13:04	09/30/14 02:24	7440-47-3	
Copper	**22.4**	mg/kg	0.93	1	09/27/14 13:04	09/30/14 02:24	7440-50-8	
Lead	**23.1**	mg/kg	1.9	1	09/27/14 13:04	09/30/14 02:24	7439-92-1	
Nickel	**24.3**	mg/kg	1.9	1	09/27/14 13:04	09/30/14 02:24	7440-02-0	
Zinc	**117**	mg/kg	1.9	1	09/27/14 13:04	09/30/14 02:24	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.14**	mg/kg	0.040	1	09/23/14 12:25	09/23/14 14:30	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**50.0**	%	0.10	1		09/26/14 17:08		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	83-32-9	H2
Acenaphthylene	**20.0**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	208-96-8	H2
Anthracene	**38.8**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	120-12-7	H2
Benzo(a)anthracene	**112**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	56-55-3	H2
Benzo(a)pyrene	**127**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	50-32-8	H2
Benzo(b)fluoranthene	**171**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	205-99-2	H2
Benzo(e)pyrene	**79.6**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	192-97-2	H2
Benzo(g,h,i)perylene	**87.3**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	191-24-2	H2
Benzo(k)fluoranthene	**59.4**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	91-58-7	H2
Chrysene	**126**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	53-70-3	H2
Dibenzofuran	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	132-64-9	H2
Fluoranthene	**176**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	206-44-0	H2
Fluorene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**73.9**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS 1001-CH (50cm) **Lab ID: 10281597044** Collected: 09/17/14 11:55 Received: 09/17/14 18:27 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	91-57-6	H2
Naphthalene	**38.0**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	91-20-3	H2
Phenanthrene	**60.6**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	85-01-8	H2
Pyrene	**153**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**181**	ug/kg	20.0	1	10/08/14 14:05	10/09/14 16:55		
Total PAHs	**1320**	ug/kg		1	10/08/14 14:05	10/09/14 16:55	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	61	%.	30-150	1	10/08/14 14:05	10/09/14 16:55	321-60-8	
Terphenyl-d14 (S)	69	%.	30-150	1	10/08/14 14:05	10/09/14 16:55	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (15cm) **Lab ID: 10281597045** Collected: 09/18/14 08:40 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	104	1	10/03/14 10:22	10/05/14 03:01	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	83	%.	50-128	1	10/03/14 10:22	10/05/14 03:01	877-09-8	
Decachlorobiphenyl (S)	87	%.	55-130	1	10/03/14 10:22	10/05/14 03:01	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	3.1	1	10/03/14 07:49	10/03/14 19:21	7440-38-2	
Cadmium	**0.82**	mg/kg	0.47	1	10/03/14 07:49	10/03/14 19:21	7440-43-9	
Chromium	**38.7**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 19:21	7440-47-3	
Copper	**34.2**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 19:21	7440-50-8	
Lead	**36.9**	mg/kg	3.1	1	10/03/14 07:49	10/03/14 19:21	7439-92-1	M1
Nickel	**26.9**	mg/kg	3.1	1	10/03/14 07:49	10/03/14 19:21	7440-02-0	
Zinc	**142**	mg/kg	3.1	1	10/03/14 07:49	10/04/14 12:52	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.20**	mg/kg	0.054	1	10/03/14 09:09	10/03/14 15:42	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**68.4**	%	0.10	1		09/29/14 14:55		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	83-32-9	H2
Acenaphthylene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	208-96-8	H2
Anthracene	**42.1**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	120-12-7	H2
Benzo(a)anthracene	**104**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	56-55-3	H2
Benzo(a)pyrene	**124**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	50-32-8	H2
Benzo(b)fluoranthene	**181**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	205-99-2	H2
Benzo(e)pyrene	**84.9**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	192-97-2	H2
Benzo(g,h,i)perylene	**89.0**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	191-24-2	H2
Benzo(k)fluoranthene	**59.4**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	91-58-7	H2
Chrysene	**126**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	53-70-3	H2
Dibenzofuran	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	132-64-9	H2
Fluoranthene	**193**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	206-44-0	H2
Fluorene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**73.9**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (15cm) **Lab ID: 10281597045** Collected: 09/18/14 08:40 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	91-57-6	H2
Naphthalene	ND	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	91-20-3	H2
Phenanthrene	**69.0**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	85-01-8	H2
Pyrene	**174**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**185**	ug/kg	31.5	1	10/08/14 14:05	10/09/14 17:17		
Total PAHs	**1320**	ug/kg		1	10/08/14 14:05	10/09/14 17:17	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	57	%.	30-150	1	10/08/14 14:05	10/09/14 17:17	321-60-8	
Terphenyl-d14 (S)	68	%.	30-150	1	10/08/14 14:05	10/09/14 17:17	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (50cm) **Lab ID: 10281597046** Collected: 09/18/14 08:45 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	11097-69-1	
PCB-1260 (Aroclor 1260)	**146**	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	77.2	1	10/03/14 10:22	10/05/14 03:17	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/03/14 10:22	10/05/14 03:17	877-09-8	
Decachlorobiphenyl (S)	74	%.	55-130	1	10/03/14 10:22	10/05/14 03:17	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.8**	mg/kg	2.2	1	10/03/14 07:49	10/03/14 19:58	7440-38-2	
Cadmium	**1.7**	mg/kg	0.34	1	10/03/14 07:49	10/03/14 19:58	7440-43-9	
Chromium	**47.0**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 19:58	7440-47-3	
Copper	**41.0**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 19:58	7440-50-8	
Lead	**64.6**	mg/kg	2.2	1	10/03/14 07:49	10/03/14 19:58	7439-92-1	
Nickel	**30.5**	mg/kg	2.2	1	10/03/14 07:49	10/03/14 19:58	7440-02-0	
Zinc	**171**	mg/kg	2.2	1	10/03/14 07:49	10/04/14 13:27	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.27**	mg/kg	0.045	1	10/03/14 09:09	10/03/14 15:48	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**57.3**	%	0.10	1		09/29/14 14:55		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	83-32-9	H2
Acenaphthylene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	208-96-8	H2
Anthracene	**32.6**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	120-12-7	H2
Benzo(a)anthracene	**111**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	56-55-3	H2
Benzo(a)pyrene	**128**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	50-32-8	H2
Benzo(b)fluoranthene	**174**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	205-99-2	H2
Benzo(e)pyrene	**85.5**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	192-97-2	H2
Benzo(g,h,i)perylene	**87.1**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	191-24-2	H2
Benzo(k)fluoranthene	**61.3**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	91-58-7	H2
Chrysene	**133**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	53-70-3	H2
Dibenzofuran	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	132-64-9	H2
Fluoranthene	**212**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	206-44-0	H2
Fluorene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**71.1**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (50cm) **Lab ID: 10281597046** Collected: 09/18/14 08:45 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	91-57-6	H2
Naphthalene	ND	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	91-20-3	H2
Phenanthrene	**88.2**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	85-01-8	H2
Pyrene	**185**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**184**	ug/kg	23.4	1	10/08/14 14:05	10/09/14 17:39		
Total PAHs	**1370**	ug/kg		1	10/08/14 14:05	10/09/14 17:39	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	60	%.	30-150	1	10/08/14 14:05	10/09/14 17:39	321-60-8	
Terphenyl-d14 (S)	66	%.	30-150	1	10/08/14 14:05	10/09/14 17:39	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (100cm) **Lab ID: 10281597047** Collected: 09/18/14 08:50 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	76.8	1	10/03/14 10:22	10/05/14 03:33	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	51	%.	50-128	1	10/03/14 10:22	10/05/14 03:33	877-09-8	
Decachlorobiphenyl (S)	70	%.	55-130	1	10/03/14 10:22	10/05/14 03:33	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**10.8**	mg/kg	2.1	1	10/03/14 07:49	10/03/14 20:03	7440-38-2	
Cadmium	**4.9**	mg/kg	0.32	1	10/03/14 07:49	10/03/14 20:03	7440-43-9	
Chromium	**74.1**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 20:03	7440-47-3	
Copper	**44.0**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 20:03	7440-50-8	
Lead	**72.3**	mg/kg	2.1	1	10/03/14 07:49	10/03/14 20:03	7439-92-1	
Nickel	**38.3**	mg/kg	2.1	1	10/03/14 07:49	10/03/14 20:03	7440-02-0	
Zinc	**169**	mg/kg	2.1	1	10/03/14 07:49	10/04/14 13:32	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.74**	mg/kg	0.044	1	10/03/14 09:09	10/03/14 15:50	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**57.0**	%	0.10	1		09/29/14 14:55		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	83-32-9	H2
Acenaphthylene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	208-96-8	H2
Anthracene	**36.1**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	120-12-7	H2
Benzo(a)anthracene	**111**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	56-55-3	H2
Benzo(a)pyrene	**114**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	50-32-8	H2
Benzo(b)fluoranthene	**157**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	205-99-2	H2
Benzo(e)pyrene	**80.4**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	192-97-2	H2
Benzo(g,h,i)perylene	**72.4**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	191-24-2	H2
Benzo(k)fluoranthene	**60.3**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	91-58-7	H2
Chrysene	**132**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	53-70-3	H2
Dibenzofuran	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	132-64-9	H2
Fluoranthene	**221**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	206-44-0	H2
Fluorene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**56.8**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1033-CH (100cm) **Lab ID: 10281597047** Collected: 09/18/14 08:50 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	91-57-6	H2
Naphthalene	**36.9**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	91-20-3	H2
Phenanthrene	**105**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	85-01-8	H2
Pyrene	**194**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**166**	ug/kg	23.2	1	10/08/14 14:05	10/09/14 19:07		
Total PAHs	**1380**	ug/kg		1	10/08/14 14:05	10/09/14 19:07	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	65	%.	30-150	1	10/08/14 14:05	10/09/14 19:07	321-60-8	
Terphenyl-d14 (S)	72	%.	30-150	1	10/08/14 14:05	10/09/14 19:07	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (15cm) **Lab ID: 10281597048** Collected: 09/18/14 09:25 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	114	1	10/03/14 10:22	10/05/14 03:49	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	81	%.	50-128	1	10/03/14 10:22	10/05/14 03:49	877-09-8	
Decachlorobiphenyl (S)	85	%.	55-130	1	10/03/14 10:22	10/05/14 03:49	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	2.9	1	10/03/14 07:49	10/03/14 20:09	7440-38-2	
Cadmium	**0.62**	mg/kg	0.44	1	10/03/14 07:49	10/03/14 20:09	7440-43-9	
Chromium	**39.0**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 20:09	7440-47-3	
Copper	**32.5**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 20:09	7440-50-8	
Lead	**31.0**	mg/kg	2.9	1	10/03/14 07:49	10/03/14 20:09	7439-92-1	
Nickel	**29.1**	mg/kg	2.9	1	10/03/14 07:49	10/03/14 20:09	7440-02-0	
Zinc	**143**	mg/kg	2.9	1	10/03/14 07:49	10/04/14 13:38	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.19**	mg/kg	0.059	1	10/03/14 09:09	10/03/14 15:56	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**71.0**	%	0.10	1		09/29/14 14:56		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	83-32-9	H2
Acenaphthylene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	208-96-8	H2
Anthracene	**49.2**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	120-12-7	H2
Benzo(a)anthracene	**109**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	56-55-3	H2
Benzo(a)pyrene	**119**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	50-32-8	H2
Benzo(b)fluoranthene	**187**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	205-99-2	H2
Benzo(e)pyrene	**85.7**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	192-97-2	H2
Benzo(g,h,i)perylene	**86.8**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	191-24-2	H2
Benzo(k)fluoranthene	**64.5**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	91-58-7	H2
Chrysene	**137**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	53-70-3	H2
Dibenzofuran	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	132-64-9	H2
Fluoranthene	**204**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	206-44-0	H2
Fluorene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**73.6**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (15cm) **Lab ID: 10281597048** Collected: 09/18/14 09:25 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	91-57-6	H2
Naphthalene	ND	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	91-20-3	H2
Phenanthrene	**68.9**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	85-01-8	H2
Pyrene	**186**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**183**	ug/kg	34.5	1	10/08/14 14:05	10/09/14 19:28		
Total PAHs	**1370**	ug/kg		1	10/08/14 14:05	10/09/14 19:28	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	47	%.	30-150	1	10/08/14 14:05	10/09/14 19:28	321-60-8	
Terphenyl-d14 (S)	65	%.	30-150	1	10/08/14 14:05	10/09/14 19:28	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (50cm) **Lab ID: 10281597049** Collected: 09/18/14 09:30 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	74.2	1	10/03/14 10:22	10/05/14 04:05	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	50-128	1	10/03/14 10:22	10/05/14 04:05	877-09-8	
Decachlorobiphenyl (S)	77	%.	55-130	1	10/03/14 10:22	10/05/14 04:05	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	1.6	1	10/03/14 07:49	10/03/14 20:15	7440-38-2	
Cadmium	**0.53**	mg/kg	0.25	1	10/03/14 07:49	10/03/14 20:15	7440-43-9	
Chromium	**29.6**	mg/kg	0.82	1	10/03/14 07:49	10/03/14 20:15	7440-47-3	
Copper	**26.6**	mg/kg	0.82	1	10/03/14 07:49	10/03/14 20:15	7440-50-8	
Lead	**29.9**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 20:15	7439-92-1	
Nickel	**22.5**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 20:15	7440-02-0	
Zinc	**121**	mg/kg	1.6	1	10/03/14 07:49	10/04/14 13:43	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.21**	mg/kg	0.041	1	10/03/14 09:09	10/03/14 15:58	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**55.5**	%	0.10	1		09/29/14 14:56		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	83-32-9	H2
Acenaphthylene	**28.2**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	208-96-8	H2
Anthracene	**64.0**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	120-12-7	H2
Benzo(a)anthracene	**155**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	56-55-3	H2
Benzo(a)pyrene	**174**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	50-32-8	H2
Benzo(b)fluoranthene	**235**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	205-99-2	H2
Benzo(e)pyrene	**116**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	192-97-2	H2
Benzo(g,h,i)perylene	**123**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	191-24-2	H2
Benzo(k)fluoranthene	**86.7**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	91-58-7	H2
Chrysene	**190**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	53-70-3	H2
Dibenzofuran	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	132-64-9	H2
Fluoranthene	**281**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	206-44-0	H2
Fluorene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**101**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (50cm) **Lab ID: 10281597049** Collected: 09/18/14 09:30 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	91-57-6	H2
Naphthalene	**35.4**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	91-20-3	H2
Phenanthrene	**134**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	85-01-8	H2
Pyrene	**250**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**246**	ug/kg	22.5	1	10/08/14 14:05	10/09/14 19:50		
Total PAHs	**1970**	ug/kg		1	10/08/14 14:05	10/09/14 19:50	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	52	%.	30-150	1	10/08/14 14:05	10/09/14 19:50	321-60-8	
Terphenyl-d14 (S)	59	%.	30-150	1	10/08/14 14:05	10/09/14 19:50	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (100cm) **Lab ID: 10281597050** Collected: 09/18/14 09:35 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	11097-69-1	
PCB-1260 (Aroclor 1260)	**147**	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	66.1	1	10/03/14 10:22	10/05/14 04:21	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	50-128	1	10/03/14 10:22	10/05/14 04:21	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/03/14 10:22	10/05/14 04:21	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.0**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 20:20	7440-38-2	
Cadmium	**1.2**	mg/kg	0.23	1	10/03/14 07:49	10/03/14 20:20	7440-43-9	
Chromium	**39.0**	mg/kg	0.76	1	10/03/14 07:49	10/03/14 20:20	7440-47-3	
Copper	**35.4**	mg/kg	0.76	1	10/03/14 07:49	10/03/14 20:20	7440-50-8	
Lead	**53.9**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 20:20	7439-92-1	
Nickel	**26.9**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 20:20	7440-02-0	
Zinc	**151**	mg/kg	1.5	1	10/03/14 07:49	10/04/14 13:48	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.25**	mg/kg	0.040	1	10/03/14 09:09	10/03/14 16:00	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**50.1**	%	0.10	1		09/29/14 14:56		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	83-32-9	H2
Acenaphthylene	**22.8**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	208-96-8	H2
Anthracene	**53.0**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	120-12-7	H2
Benzo(a)anthracene	**151**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	56-55-3	H2
Benzo(a)pyrene	**168**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	50-32-8	H2
Benzo(b)fluoranthene	**214**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	205-99-2	H2
Benzo(e)pyrene	**110**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	192-97-2	H2
Benzo(g,h,i)perylene	**114**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	191-24-2	H2
Benzo(k)fluoranthene	**87.3**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	91-58-7	H2
Chrysene	**171**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	53-70-3	H2
Dibenzofuran	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	132-64-9	H2
Fluoranthene	**281**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	206-44-0	H2
Fluorene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**91.9**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1034-CH (100cm) **Lab ID: 10281597050** Collected: 09/18/14 09:35 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	91-57-6	H2
Naphthalene	**27.4**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	91-20-3	H2
Phenanthrene	**132**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	85-01-8	H2
Pyrene	**244**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**236**	ug/kg	20.0	1	10/08/14 14:05	10/10/14 10:46		
Total PAHs	**1870**	ug/kg		1	10/08/14 14:05	10/10/14 10:46	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	66	%.	30-150	1	10/08/14 14:05	10/10/14 10:46	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	10/08/14 14:05	10/10/14 10:46	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (15cm) **Lab ID: 10281597051** Collected: 09/18/14 10:05 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	71.0	1	10/03/14 10:22	10/05/14 04:37	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	70	%.	50-128	1	10/03/14 10:22	10/05/14 04:37	877-09-8	
Decachlorobiphenyl (S)	81	%.	55-130	1	10/03/14 10:22	10/05/14 04:37	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.0**	mg/kg	1.7	1	10/03/14 07:49	10/03/14 20:25	7440-38-2	
Cadmium	ND	mg/kg	0.26	1	10/03/14 07:49	10/03/14 20:25	7440-43-9	
Chromium	**24.6**	mg/kg	0.85	1	10/03/14 07:49	10/03/14 20:25	7440-47-3	
Copper	**19.4**	mg/kg	0.85	1	10/03/14 07:49	10/03/14 20:25	7440-50-8	
Lead	**16.5**	mg/kg	1.7	1	10/03/14 07:49	10/03/14 20:25	7439-92-1	
Nickel	**19.4**	mg/kg	1.7	1	10/03/14 07:49	10/03/14 20:25	7440-02-0	
Zinc	**80.6**	mg/kg	1.7	1	10/03/14 07:49	10/04/14 13:53	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.10**	mg/kg	0.043	1	10/03/14 09:09	10/03/14 16:02	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**53.5**	%	0.10	1		09/29/14 14:57		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	83-32-9	H2
Acenaphthylene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	208-96-8	H2
Anthracene	**63.5**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	120-12-7	H2
Benzo(a)anthracene	**111**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	56-55-3	H2
Benzo(a)pyrene	**119**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	50-32-8	H2
Benzo(b)fluoranthene	**177**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	205-99-2	H2
Benzo(e)pyrene	**79.9**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	192-97-2	H2
Benzo(g,h,i)perylene	**86.5**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	191-24-2	H2
Benzo(k)fluoranthene	**66.6**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	91-58-7	H2
Chrysene	**156**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	53-70-3	H2
Dibenzofuran	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	132-64-9	H2
Fluoranthene	**197**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	206-44-0	H2
Fluorene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**73.6**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (15cm) **Lab ID: 10281597051** Collected: 09/18/14 10:05 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	91-57-6	H2
Naphthalene	**27.9**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	91-20-3	H2
Phenanthrene	**78.9**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	85-01-8	H2
Pyrene	**177**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**175**	ug/kg	21.5	1	10/08/14 14:05	10/10/14 11:08		
Total PAHs	**1410**	ug/kg		1	10/08/14 14:05	10/10/14 11:08	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	10/08/14 14:05	10/10/14 11:08	321-60-8	
Terphenyl-d14 (S)	79	%.	30-150	1	10/08/14 14:05	10/10/14 11:08	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (50cm) **Lab ID: 10281597052** Collected: 09/18/14 10:10 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	54.1	1	10/03/14 10:22	10/05/14 04:53	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	50-128	1	10/03/14 10:22	10/05/14 04:53	877-09-8	
Decachlorobiphenyl (S)	81	%.	55-130	1	10/03/14 10:22	10/05/14 04:53	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.3**	mg/kg	1.3	1	10/03/14 07:49	10/03/14 20:30	7440-38-2	
Cadmium	ND	mg/kg	0.19	1	10/03/14 07:49	10/03/14 20:30	7440-43-9	
Chromium	**14.0**	mg/kg	0.63	1	10/03/14 07:49	10/03/14 20:30	7440-47-3	
Copper	**10.8**	mg/kg	0.63	1	10/03/14 07:49	10/03/14 20:30	7440-50-8	
Lead	**15.3**	mg/kg	1.3	1	10/03/14 07:49	10/03/14 20:30	7439-92-1	
Nickel	**11.4**	mg/kg	1.3	1	10/03/14 07:49	10/03/14 20:30	7440-02-0	
Zinc	**48.6**	mg/kg	1.3	1	10/03/14 07:49	10/04/14 13:58	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.077**	mg/kg	0.031	1	10/03/14 09:09	10/03/14 16:04	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**39.0**	%	0.10	1		09/29/14 14:57		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	83-32-9	H2
Acenaphthylene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	208-96-8	H2
Anthracene	**33.7**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	120-12-7	H2
Benzo(a)anthracene	**73.0**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	56-55-3	H2
Benzo(a)pyrene	**76.8**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	50-32-8	H2
Benzo(b)fluoranthene	**108**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	205-99-2	H2
Benzo(e)pyrene	**51.8**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	192-97-2	H2
Benzo(g,h,i)perylene	**51.6**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	191-24-2	H2
Benzo(k)fluoranthene	**39.3**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	91-58-7	H2
Chrysene	**87.7**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	53-70-3	H2
Dibenzofuran	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	132-64-9	H2
Fluoranthene	**146**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	206-44-0	H2
Fluorene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**42.8**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (50cm) **Lab ID: 10281597052** Collected: 09/18/14 10:10 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	91-57-6	H2
Naphthalene	**18.4**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	91-20-3	H2
Phenanthrene	**65.7**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	85-01-8	H2
Pyrene	**126**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**113**	ug/kg	16.4	1	10/08/14 14:05	10/10/14 11:30		
Total PAHs	**921**	ug/kg		1	10/08/14 14:05	10/10/14 11:30	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	65	%.	30-150	1	10/08/14 14:05	10/10/14 11:30	321-60-8	
Terphenyl-d14 (S)	69	%.	30-150	1	10/08/14 14:05	10/10/14 11:30	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (100cm) **Lab ID: 10281597053** Collected: 09/18/14 10:15 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	59.9	1	10/03/14 10:22	10/05/14 05:08	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	50-128	1	10/03/14 10:22	10/05/14 05:08	877-09-8	
Decachlorobiphenyl (S)	80	%.	55-130	1	10/03/14 10:22	10/05/14 05:08	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	1.8	1	10/03/14 07:49	10/03/14 20:35	7440-38-2	
Cadmium	**0.33**	mg/kg	0.27	1	10/03/14 07:49	10/03/14 20:35	7440-43-9	
Chromium	**23.3**	mg/kg	0.90	1	10/03/14 07:49	10/03/14 20:35	7440-47-3	
Copper	**18.2**	mg/kg	0.90	1	10/03/14 07:49	10/03/14 20:35	7440-50-8	
Lead	**19.1**	mg/kg	1.8	1	10/03/14 07:49	10/03/14 20:35	7439-92-1	
Nickel	**18.2**	mg/kg	1.8	1	10/03/14 07:49	10/03/14 20:35	7440-02-0	
Zinc	**95.0**	mg/kg	1.8	1	10/03/14 07:49	10/04/14 14:04	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.12**	mg/kg	0.032	1	10/03/14 09:09	10/03/14 16:06	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**44.9**	%	0.10	1		09/29/14 14:57		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	83-32-9	H2
Acenaphthylene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	208-96-8	H2
Anthracene	**24.7**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	120-12-7	H2
Benzo(a)anthracene	**66.2**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	56-55-3	H2
Benzo(a)pyrene	**74.9**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	50-32-8	H2
Benzo(b)fluoranthene	**101**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	205-99-2	H2
Benzo(e)pyrene	**48.1**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	192-97-2	H2
Benzo(g,h,i)perylene	**50.8**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	191-24-2	H2
Benzo(k)fluoranthene	**34.5**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	207-08-9	H2
2-Chloronaphthalene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	91-58-7	H2
Chrysene	**74.5**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	53-70-3	H2
Dibenzofuran	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	132-64-9	H2
Fluoranthene	**116**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	206-44-0	H2
Fluorene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	86-73-7	H2
Indeno(1,2,3-cd)pyrene	**41.6**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	193-39-5	H2

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1031-CH (100cm) **Lab ID: 10281597053** Collected: 09/18/14 10:15 Received: 09/18/14 18:48 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	90-12-0	H2
2-Methylnaphthalene	ND	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	91-57-6	H2
Naphthalene	**22.3**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	91-20-3	H2
Phenanthrene	**50.3**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	85-01-8	H2
Pyrene	**101**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14	129-00-0	H2
Total BaP Eq. MN 2006sh. ND=RL	**110**	ug/kg	18.1	1	10/08/14 14:05	10/10/14 12:14		
Total PAHs	**806**	ug/kg		1	10/08/14 14:05	10/10/14 12:14	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	65	%.	30-150	1	10/08/14 14:05	10/10/14 12:14	321-60-8	
Terphenyl-d14 (S)	70	%.	30-150	1	10/08/14 14:05	10/10/14 12:14	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1041-CH (15cm) **Lab ID: 10281597054** Collected: 09/18/14 08:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.5	1	10/03/14 10:22	10/05/14 05:24	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	80	%.	50-128	1	10/03/14 10:22	10/05/14 05:24	877-09-8	
Decachlorobiphenyl (S)	82	%.	55-130	1	10/03/14 10:22	10/05/14 05:24	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	0.95	1	10/03/14 07:49	10/03/14 20:41	7440-38-2	
Cadmium	ND	mg/kg	0.14	1	10/03/14 07:49	10/03/14 20:41	7440-43-9	
Chromium	**10.5**	mg/kg	0.48	1	10/03/14 07:49	10/03/14 20:41	7440-47-3	
Copper	**3.5**	mg/kg	0.48	1	10/03/14 07:49	10/03/14 20:41	7440-50-8	
Lead	**4.0**	mg/kg	0.95	1	10/03/14 07:49	10/03/14 20:41	7439-92-1	
Nickel	**8.2**	mg/kg	0.95	1	10/03/14 07:49	10/03/14 20:41	7440-02-0	
Zinc	**23.9**	mg/kg	0.95	1	10/03/14 07:49	10/04/14 14:09	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.023	1	10/03/14 09:09	10/03/14 16:08	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**25.9**	%	0.10	1		10/01/14 14:46		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	83-32-9	
Acenaphthylene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	208-96-8	
Anthracene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	205-99-2	
Benzo(e)pyrene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	91-58-7	L2
Chrysene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	53-70-3	
Dibenzofuran	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	132-64-9	
Fluoranthene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	206-44-0	
Fluorene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1041-CH (15cm) **Lab ID: 10281597054** Collected: 09/18/14 08:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	90-12-0	
2-Methylnaphthalene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	91-57-6	
Naphthalene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	91-20-3	
Phenanthrene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	85-01-8	
Pyrene	ND	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**26.5**	ug/kg	13.5	1	10/02/14 07:48	10/03/14 20:25		
Total PAHs	**0.0000000045**	ug/kg		1	10/02/14 07:48	10/03/14 20:25	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	61	%.	30-150	1	10/02/14 07:48	10/03/14 20:25	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	10/02/14 07:48	10/03/14 20:25	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1041-CH (50cm) **Lab ID: 10281597055** Collected: 09/18/14 08:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	40.8	1	10/03/14 10:22	10/05/14 05:40	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	50-128	1	10/03/14 10:22	10/05/14 05:40	877-09-8	
Decachlorobiphenyl (S)	81	%.	55-130	1	10/03/14 10:22	10/05/14 05:40	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	1.1	1	10/03/14 07:49	10/03/14 20:54	7440-38-2	
Cadmium	ND	mg/kg	0.16	1	10/03/14 07:49	10/03/14 20:54	7440-43-9	
Chromium	**7.5**	mg/kg	0.53	1	10/03/14 07:49	10/03/14 20:54	7440-47-3	
Copper	**3.1**	mg/kg	0.53	1	10/03/14 07:49	10/03/14 20:54	7440-50-8	
Lead	**4.2**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 20:54	7439-92-1	
Nickel	**6.3**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 20:54	7440-02-0	
Zinc	**26.8**	mg/kg	1.1	1	10/03/14 07:49	10/04/14 14:23	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.022	1	10/03/14 09:09	10/03/14 16:10	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**19.0**	%	0.10	1		10/01/14 14:46		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	83-32-9	
Acenaphthylene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	208-96-8	
Anthracene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	120-12-7	
Benzo(a)anthracene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	56-55-3	
Benzo(a)pyrene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	50-32-8	
Benzo(b)fluoranthene	**13.7**	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	205-99-2	
Benzo(e)pyrene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	91-58-7	L2
Chrysene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	53-70-3	
Dibenzofuran	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	132-64-9	
Fluoranthene	**14.6**	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	206-44-0	
Fluorene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1041-CH (50cm) **Lab ID: 10281597055** Collected: 09/18/14 08:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	91-57-6	
Naphthalene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	91-20-3	
Phenanthrene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	85-01-8	
Pyrene	ND	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**24.5**	ug/kg	12.4	1	10/02/14 07:48	10/03/14 20:47		
Total PAHs	**28.3**	ug/kg		1	10/02/14 07:48	10/03/14 20:47	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	64	%.	30-150	1	10/02/14 07:48	10/03/14 20:47	321-60-8	
Terphenyl-d14 (S)	69	%.	30-150	1	10/02/14 07:48	10/03/14 20:47	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: NSW1041-CH **Lab ID: 10281597056** Collected: 09/19/14 09:25 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		09/26/14 15:11		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.19**	mg/L	0.040	1		10/06/14 18:42	7664-41-7	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1004-CH (15cm) **Lab ID: 10281597057** Collected: 09/19/14 10:45 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	124	1	10/03/14 10:22	10/05/14 05:56	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:22	10/05/14 05:56	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:22	10/05/14 05:56	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	3.0	1	10/03/14 07:49	10/03/14 21:00	7440-38-2	
Cadmium	ND	mg/kg	0.45	1	10/03/14 07:49	10/03/14 21:00	7440-43-9	
Chromium	**28.1**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 21:00	7440-47-3	
Copper	**24.1**	mg/kg	1.5	1	10/03/14 07:49	10/03/14 21:00	7440-50-8	
Lead	**9.1**	mg/kg	3.0	1	10/03/14 07:49	10/03/14 21:00	7439-92-1	
Nickel	**20.2**	mg/kg	3.0	1	10/03/14 07:49	10/03/14 21:00	7440-02-0	
Zinc	**66.2**	mg/kg	3.0	1	10/03/14 07:49	10/04/14 14:28	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.076**	mg/kg	0.073	1	10/03/14 09:09	10/03/14 16:12	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**73.4**	%	0.10	1		10/01/14 14:46		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	83-32-9	
Acenaphthylene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	208-96-8	
Anthracene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	120-12-7	
Benzo(a)anthracene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	56-55-3	
Benzo(a)pyrene	**40.3**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	50-32-8	
Benzo(b)fluoranthene	**53.6**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	205-99-2	
Benzo(e)pyrene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	207-08-9	
2-Chloronaphthalene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	91-58-7	L2
Chrysene	**40.1**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	53-70-3	
Dibenzofuran	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	132-64-9	
Fluoranthene	**73.5**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	206-44-0	
Fluorene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1004-CH (15cm) **Lab ID: 10281597057** Collected: 09/19/14 10:45 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	90-12-0	
2-Methylnaphthalene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	91-57-6	
Naphthalene	ND	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	91-20-3	
Phenanthrene	**42.6**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	85-01-8	
Pyrene	**62.1**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**78.3**	ug/kg	37.4	1	10/02/14 07:48	10/03/14 21:09		
Total PAHs	**312**	ug/kg		1	10/02/14 07:48	10/03/14 21:09	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	69	%.	30-150	1	10/02/14 07:48	10/03/14 21:09	321-60-8	
Terphenyl-d14 (S)	73	%.	30-150	1	10/02/14 07:48	10/03/14 21:09	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1004-CH (50cm) **Lab ID: 10281597058** Collected: 09/19/14 10:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	142	1	10/03/14 10:22	10/05/14 06:12	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	65	%.	50-128	1	10/03/14 10:22	10/05/14 06:12	877-09-8	
Decachlorobiphenyl (S)	76	%.	55-130	1	10/03/14 10:22	10/05/14 06:12	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	3.9	1	10/03/14 07:49	10/03/14 21:06	7440-38-2	
Cadmium	ND	mg/kg	0.59	1	10/03/14 07:49	10/03/14 21:06	7440-43-9	
Chromium	**19.6**	mg/kg	2.0	1	10/03/14 07:49	10/03/14 21:06	7440-47-3	
Copper	**25.2**	mg/kg	2.0	1	10/03/14 07:49	10/03/14 21:06	7440-50-8	
Lead	**4.5**	mg/kg	3.9	1	10/03/14 07:49	10/03/14 21:06	7439-92-1	
Nickel	**13.9**	mg/kg	3.9	1	10/03/14 07:49	10/03/14 21:06	7440-02-0	
Zinc	**29.1**	mg/kg	3.9	1	10/03/14 07:49	10/04/14 14:34	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.083	1	10/03/14 09:09	10/03/14 16:19	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**76.7**	%	0.10	1		10/01/14 14:47		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	83-32-9	
Acenaphthylene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	208-96-8	
Anthracene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	120-12-7	
Benzo(a)anthracene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	56-55-3	
Benzo(a)pyrene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	205-99-2	
Benzo(e)pyrene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	207-08-9	
2-Chloronaphthalene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	91-58-7	L2
Chrysene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	53-70-3	
Dibenzofuran	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	132-64-9	
Fluoranthene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	206-44-0	
Fluorene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1004-CH (50cm) **Lab ID: 10281597058** Collected: 09/19/14 10:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	90-12-0	
2-Methylnaphthalene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	91-57-6	
Naphthalene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	91-20-3	
Phenanthrene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	85-01-8	
Pyrene	ND	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**84.6**	ug/kg	42.9	1	10/02/14 07:48	10/03/14 21:31		
Total PAHs	**0.000000014**	ug/kg		1	10/02/14 07:48	10/03/14 21:31	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	63	%.	30-150	1	10/02/14 07:48	10/03/14 21:31	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	10/02/14 07:48	10/03/14 21:31	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: NSW1004-CH **Lab ID: 10281597059** Collected: 09/19/14 11:15 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		09/26/14 15:12		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.098**	mg/L	0.040	1		10/06/14 18:42	7664-41-7	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1012-CH (15cm) **Lab ID: 10281597060** Collected: 09/19/14 11:35 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	68.6	1	10/03/14 10:22	10/05/14 07:00	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	75	%.	50-128	1	10/03/14 10:22	10/05/14 07:00	877-09-8	
Decachlorobiphenyl (S)	86	%.	55-130	1	10/03/14 10:22	10/05/14 07:00	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	1.7	1	10/03/14 07:49	10/03/14 21:13	7440-38-2	
Cadmium	ND	mg/kg	0.26	1	10/03/14 07:49	10/03/14 21:13	7440-43-9	
Chromium	**14.2**	mg/kg	0.87	1	10/03/14 07:49	10/03/14 21:13	7440-47-3	
Copper	**8.7**	mg/kg	0.87	1	10/03/14 07:49	10/03/14 21:13	7440-50-8	
Lead	**3.2**	mg/kg	1.7	1	10/03/14 07:49	10/03/14 21:13	7439-92-1	
Nickel	**10.8**	mg/kg	1.7	1	10/03/14 07:49	10/03/14 21:13	7440-02-0	
Zinc	**38.7**	mg/kg	1.7	1	10/03/14 07:49	10/04/14 14:41	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.039	1	10/03/14 09:09	10/03/14 16:21	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**51.9**	%	0.10	1		10/01/14 14:47		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	83-32-9	
Acenaphthylene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	208-96-8	
Anthracene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	120-12-7	
Benzo(a)anthracene	**29.6**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	56-55-3	
Benzo(a)pyrene	**30.7**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	50-32-8	
Benzo(b)fluoranthene	**33.7**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	205-99-2	
Benzo(e)pyrene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	207-08-9	
2-Chloronaphthalene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	91-58-7	L2
Chrysene	**26.8**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	53-70-3	
Dibenzofuran	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	132-64-9	
Fluoranthene	**73.6**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	206-44-0	
Fluorene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1012-CH (15cm) **Lab ID: 10281597060** Collected: 09/19/14 11:35 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	90-12-0	
2-Methylnaphthalene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	91-57-6	
Naphthalene	ND	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	91-20-3	
Phenanthrene	**57.0**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	85-01-8	
Pyrene	**55.9**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**53.1**	ug/kg	20.8	1	10/02/14 07:48	10/03/14 21:53		
Total PAHs	**307**	ug/kg		1	10/02/14 07:48	10/03/14 21:53	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	68	%.	30-150	1	10/02/14 07:48	10/03/14 21:53	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	10/02/14 07:48	10/03/14 21:53	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1012-CH (50cm) **Lab ID: 10281597061** Collected: 09/19/14 11:40 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	79.2	1	10/03/14 10:22	10/05/14 07:16	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	56	%.	50-128	1	10/03/14 10:22	10/05/14 07:16	877-09-8	
Decachlorobiphenyl (S)	67	%.	55-130	1	10/03/14 10:22	10/05/14 07:16	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	2.3	1	10/03/14 07:49	10/03/14 21:20	7440-38-2	
Cadmium	ND	mg/kg	0.34	1	10/03/14 07:49	10/03/14 21:20	7440-43-9	
Chromium	**20.5**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 21:20	7440-47-3	
Copper	**12.5**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 21:20	7440-50-8	
Lead	**3.8**	mg/kg	2.3	1	10/03/14 07:49	10/03/14 21:20	7439-92-1	
Nickel	**14.6**	mg/kg	2.3	1	10/03/14 07:49	10/03/14 21:20	7440-02-0	
Zinc	**52.7**	mg/kg	2.3	1	10/03/14 07:49	10/04/14 14:47	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.045	1	10/03/14 09:09	10/03/14 16:23	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**58.5**	%	0.10	1		10/01/14 14:47		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	83-32-9	
Acenaphthylene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	208-96-8	
Anthracene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	120-12-7	
Benzo(a)anthracene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	56-55-3	
Benzo(a)pyrene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	205-99-2	
Benzo(e)pyrene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	207-08-9	
2-Chloronaphthalene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	91-58-7	L2
Chrysene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	53-70-3	
Dibenzofuran	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	132-64-9	
Fluoranthene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	206-44-0	
Fluorene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1012-CH (50cm) **Lab ID: 10281597061** Collected: 09/19/14 11:40 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	90-12-0	
2-Methylnaphthalene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	91-57-6	
Naphthalene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	91-20-3	
Phenanthrene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	85-01-8	
Pyrene	ND	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**47.4**	ug/kg	24.1	1	10/02/14 07:48	10/03/14 22:15		
Total PAHs	**0.0000000080**	ug/kg		1	10/02/14 07:48	10/03/14 22:15	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	11	%.	30-150	1	10/02/14 07:48	10/03/14 22:15	321-60-8	2M,S0
Terphenyl-d14 (S)	13	%.	30-150	1	10/02/14 07:48	10/03/14 22:15	1718-51-0	S0

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: NSW1012-CH **Lab ID: 10281597062** Collected: 09/19/14 12:25 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		09/26/14 15:12		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.13**	mg/L	0.040	1		10/06/14 18:44	7664-41-7	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: NSW1016-CH **Lab ID: 10281597063** Collected: 09/19/14 12:50 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		09/26/14 15:13		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.098**	mg/L	0.040	1		10/06/14 18:45	7664-41-7	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: DUP-02-CH **Lab ID: 10281597064** Collected: 09/19/14 00:00 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		09/26/14 15:13		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.18**	mg/L	0.040	1		10/06/14 18:46	7664-41-7	M1

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: EB-03-CH **Lab ID: 10281597065** Collected: 09/19/14 14:30 Received: 09/19/14 18:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510							
Acenaphthene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	83-32-9	
Acenaphthylene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	208-96-8	
Anthracene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	207-08-9	
Chrysene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	53-70-3	
Fluoranthene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	206-44-0	
Fluorene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	193-39-5	
Naphthalene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	91-20-3	
Phenanthrene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	85-01-8	
Pyrene	ND	ug/L	0.042	1	09/25/14 09:45	10/01/14 03:08	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	74	%.	54-125	1	09/25/14 09:45	10/01/14 03:08	321-60-8	
Terphenyl-d14 (S)	80	%.	68-125	1	09/25/14 09:45	10/01/14 03:08	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1017-CH (15CM) **Lab ID: 10281597066** Collected: 09/18/14 13:45 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	70.2	1	10/03/14 10:22	10/05/14 07:32	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	50-128	1	10/03/14 10:22	10/05/14 07:32	877-09-8	
Decachlorobiphenyl (S)	75	%.	55-130	1	10/03/14 10:22	10/05/14 07:32	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.6**	mg/kg	2.0	1	10/03/14 07:49	10/03/14 21:26	7440-38-2	
Cadmium	**0.45**	mg/kg	0.30	1	10/03/14 07:49	10/03/14 21:26	7440-43-9	
Chromium	**19.4**	mg/kg	1.0	1	10/03/14 07:49	10/03/14 21:26	7440-47-3	
Copper	**18.9**	mg/kg	1.0	1	10/03/14 07:49	10/03/14 21:26	7440-50-8	
Lead	**37.1**	mg/kg	2.0	1	10/03/14 07:49	10/03/14 21:26	7439-92-1	
Nickel	**15.7**	mg/kg	2.0	1	10/03/14 07:49	10/03/14 21:26	7440-02-0	
Zinc	**107**	mg/kg	2.0	1	10/03/14 07:49	10/04/14 14:53	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.22**	mg/kg	0.043	1	10/03/14 09:09	10/03/14 16:25	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**53.0**	%	0.10	1		10/01/14 16:04		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	83-32-9	
Acenaphthylene	**21.5**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	208-96-8	
Anthracene	**34.9**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	120-12-7	
Benzo(a)anthracene	**126**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	56-55-3	
Benzo(a)pyrene	**152**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	50-32-8	
Benzo(b)fluoranthene	**205**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	205-99-2	
Benzo(e)pyrene	**94.3**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	192-97-2	
Benzo(g,h,i)perylene	**104**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	191-24-2	
Benzo(k)fluoranthene	**69.3**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	91-58-7	L2
Chrysene	**140**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	53-70-3	
Dibenzofuran	ND	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	132-64-9	
Fluoranthene	**203**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	206-44-0	
Fluorene	ND	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**84.1**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1017-CH (15CM) **Lab ID: 10281597066** Collected: 09/18/14 13:45 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**24.6**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	90-12-0	
2-Methylnaphthalene	**36.7**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	91-57-6	
Naphthalene	**92.8**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	91-20-3	
Phenanthrene	**88.0**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	85-01-8	
Pyrene	**177**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**214**	ug/kg	21.2	1	10/02/14 07:48	10/03/14 22:37		
Total PAHs	**1590**	ug/kg		1	10/02/14 07:48	10/03/14 22:37	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	10/02/14 07:48	10/03/14 22:37	321-60-8	
Terphenyl-d14 (S)	73	%.	30-150	1	10/02/14 07:48	10/03/14 22:37	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1017-CH (50CM) **Lab ID: 10281597067** Collected: 09/18/14 13:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	55.0	1	10/03/14 10:22	10/05/14 07:48	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	50-128	1	10/03/14 10:22	10/05/14 07:48	877-09-8	
Decachlorobiphenyl (S)	71	%.	55-130	1	10/03/14 10:22	10/05/14 07:48	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**1.7**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 21:31	7440-38-2	
Cadmium	**0.33**	mg/kg	0.25	1	10/03/14 07:49	10/03/14 21:31	7440-43-9	
Chromium	**18.3**	mg/kg	0.82	1	10/03/14 07:49	10/03/14 21:31	7440-47-3	
Copper	**16.5**	mg/kg	0.82	1	10/03/14 07:49	10/03/14 21:31	7440-50-8	
Lead	**20.3**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 21:31	7439-92-1	
Nickel	**15.3**	mg/kg	1.6	1	10/03/14 07:49	10/03/14 21:31	7440-02-0	
Zinc	**82.6**	mg/kg	1.6	1	10/03/14 07:49	10/04/14 14:57	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.14**	mg/kg	0.029	1	10/03/14 09:09	10/03/14 16:27	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**40.2**	%	0.10	1		10/01/14 16:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	83-32-9	
Acenaphthylene	**23.7**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	208-96-8	
Anthracene	**41.5**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	120-12-7	
Benzo(a)anthracene	**132**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	56-55-3	
Benzo(a)pyrene	**162**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	50-32-8	
Benzo(b)fluoranthene	**206**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	205-99-2	
Benzo(e)pyrene	**101**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	192-97-2	
Benzo(g,h,i)perylene	**113**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	191-24-2	
Benzo(k)fluoranthene	**75.0**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	91-58-7	L2
Chrysene	**158**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	53-70-3	
Dibenzofuran	**17.9**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	132-64-9	
Fluoranthene	**219**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	206-44-0	
Fluorene	**21.5**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	86-73-7	
Indeno(1,2,3-cd)pyrene	**91.6**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1017-CH (50CM) **Lab ID: 10281597067** Collected: 09/18/14 13:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**27.4**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	90-12-0	
2-Methylnaphthalene	**40.8**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	91-57-6	
Naphthalene	**96.9**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	91-20-3	
Phenanthrene	**99.2**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	85-01-8	
Pyrene	**190**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**224**	ug/kg	16.7	1	10/02/14 07:48	10/03/14 22:59		
Total PAHs	**1750**	ug/kg		1	10/02/14 07:48	10/03/14 22:59	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	71	%.	30-150	1	10/02/14 07:48	10/03/14 22:59	321-60-8	
Terphenyl-d14 (S)	77	%.	30-150	1	10/02/14 07:48	10/03/14 22:59	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (15CM) **Lab ID: 10281597068** Collected: 09/18/14 14:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	65.3	1	10/03/14 10:24	10/05/14 09:55	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/03/14 10:24	10/05/14 09:55	877-09-8	
Decachlorobiphenyl (S)	74	%.	55-130	1	10/03/14 10:24	10/05/14 09:55	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.5**	mg/kg	1.8	1	10/03/14 07:49	10/03/14 21:35	7440-38-2	
Cadmium	**0.39**	mg/kg	0.27	1	10/03/14 07:49	10/03/14 21:35	7440-43-9	
Chromium	**24.9**	mg/kg	0.89	1	10/03/14 07:49	10/03/14 21:35	7440-47-3	
Copper	**19.3**	mg/kg	0.89	1	10/03/14 07:49	10/03/14 21:35	7440-50-8	
Lead	**23.2**	mg/kg	1.8	1	10/03/14 07:49	10/03/14 21:35	7439-92-1	
Nickel	**18.8**	mg/kg	1.8	1	10/03/14 07:49	10/03/14 21:35	7440-02-0	
Zinc	**112**	mg/kg	1.8	1	10/03/14 07:49	10/04/14 15:02	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.20**	mg/kg	0.035	1	10/03/14 09:09	10/03/14 16:29	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**49.5**	%	0.10	1		10/01/14 16:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	83-32-9	
Acenaphthylene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	208-96-8	
Anthracene	**34.7**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	120-12-7	
Benzo(a)anthracene	**98.0**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	56-55-3	
Benzo(a)pyrene	**122**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	50-32-8	
Benzo(b)fluoranthene	**168**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	205-99-2	
Benzo(e)pyrene	**75.7**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	192-97-2	
Benzo(g,h,i)perylene	**86.3**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	191-24-2	
Benzo(k)fluoranthene	**55.3**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	207-08-9	
2-Chloronaphthalene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	91-58-7	L2
Chrysene	**121**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	53-70-3	
Dibenzofuran	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	132-64-9	
Fluoranthene	**162**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	206-44-0	
Fluorene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	86-73-7	
Indeno(1,2,3-cd)pyrene	**71.9**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (15CM) **Lab ID: 10281597068** Collected: 09/18/14 14:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	90-12-0	
2-Methylnaphthalene	**21.0**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	91-57-6	
Naphthalene	**43.8**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	91-20-3	
Phenanthrene	**57.2**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	85-01-8	
Pyrene	**138**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**174**	ug/kg	19.7	1	10/02/14 07:48	10/03/14 23:21		
Total PAHs	**1230**	ug/kg		1	10/02/14 07:48	10/03/14 23:21	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	62	%.	30-150	1	10/02/14 07:48	10/03/14 23:21	321-60-8	
Terphenyl-d14 (S)	74	%.	30-150	1	10/02/14 07:48	10/03/14 23:21	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (50CM) **Lab ID: 10281597069** Collected: 09/18/14 14:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:43	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	50-128	1	10/03/14 10:24	10/05/14 10:43	877-09-8	
Decachlorobiphenyl (S)	79	%.	55-130	1	10/03/14 10:24	10/05/14 10:43	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	0.93	1	10/03/14 07:49	10/03/14 21:40	7440-38-2	
Cadmium	ND	mg/kg	0.14	1	10/03/14 07:49	10/03/14 21:40	7440-43-9	
Chromium	**12.3**	mg/kg	0.46	1	10/03/14 07:49	10/03/14 21:40	7440-47-3	
Copper	**3.6**	mg/kg	0.46	1	10/03/14 07:49	10/03/14 21:40	7440-50-8	
Lead	**3.0**	mg/kg	0.93	1	10/03/14 07:49	10/03/14 21:40	7439-92-1	
Nickel	**9.0**	mg/kg	0.93	1	10/03/14 07:49	10/03/14 21:40	7440-02-0	
Zinc	**20.6**	mg/kg	0.93	1	10/03/14 07:49	10/04/14 15:07	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.026	1	10/03/14 09:09	10/03/14 16:31	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**23.6**	%	0.10	1		10/01/14 16:05		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	83-32-9	
Acenaphthylene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	208-96-8	
Anthracene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	205-99-2	
Benzo(e)pyrene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	91-58-7	L2
Chrysene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	53-70-3	
Dibenzofuran	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	132-64-9	
Fluoranthene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	206-44-0	
Fluorene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (50CM) **Lab ID: 10281597069** Collected: 09/18/14 14:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	90-12-0	
2-Methylnaphthalene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	91-57-6	
Naphthalene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	91-20-3	
Phenanthrene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	85-01-8	
Pyrene	ND	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**25.8**	ug/kg	13.1	1	10/02/14 07:48	10/03/14 23:42		
Total PAHs	**0.0000000044**	ug/kg		1	10/02/14 07:48	10/03/14 23:42	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	53	%.	30-150	1	10/02/14 07:48	10/03/14 23:42	321-60-8	
Terphenyl-d14 (S)	71	%.	30-150	1	10/02/14 07:48	10/03/14 23:42	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (100CM) **Lab ID: 10281597070** Collected: 09/18/14 14:35 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	43.2	1	10/03/14 10:24	10/05/14 10:59	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	77	%.	50-128	1	10/03/14 10:24	10/05/14 10:59	877-09-8	
Decachlorobiphenyl (S)	79	%.	55-130	1	10/03/14 10:24	10/05/14 10:59	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	1.1	1	10/03/14 07:49	10/03/14 21:45	7440-38-2	
Cadmium	ND	mg/kg	0.16	1	10/03/14 07:49	10/03/14 21:45	7440-43-9	
Chromium	**10.2**	mg/kg	0.54	1	10/03/14 07:49	10/03/14 21:45	7440-47-3	
Copper	**3.3**	mg/kg	0.54	1	10/03/14 07:49	10/03/14 21:45	7440-50-8	
Lead	**2.5**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 21:45	7439-92-1	
Nickel	**8.8**	mg/kg	1.1	1	10/03/14 07:49	10/03/14 21:45	7440-02-0	
Zinc	**17.8**	mg/kg	1.1	1	10/03/14 07:49	10/04/14 15:12	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.025	1	10/03/14 09:09	10/03/14 16:33	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**23.6**	%	0.10	1		10/01/14 16:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	83-32-9	
Acenaphthylene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	208-96-8	
Anthracene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	205-99-2	
Benzo(e)pyrene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	207-08-9	
2-Chloronaphthalene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	91-58-7	L2
Chrysene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	53-70-3	
Dibenzofuran	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	132-64-9	
Fluoranthene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	206-44-0	
Fluorene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1011-CH (100CM) **Lab ID: 10281597070** Collected: 09/18/14 14:35 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	90-12-0	
2-Methylnaphthalene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	91-57-6	
Naphthalene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	91-20-3	
Phenanthrene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	85-01-8	
Pyrene	ND	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**25.7**	ug/kg	13.0	1	10/02/14 07:48	10/04/14 00:04		
Total PAHs	**0.0000000043**	ug/kg		1	10/02/14 07:48	10/04/14 00:04	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	32	%.	30-150	1	10/02/14 07:48	10/04/14 00:04	321-60-8	
Terphenyl-d14 (S)	70	%.	30-150	1	10/02/14 07:48	10/04/14 00:04	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1009-CH (15CM) **Lab ID: 10281597071** Collected: 09/18/14 14:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	53.0	1	10/03/14 10:24	10/05/14 11:15	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	65	%.	50-128	1	10/03/14 10:24	10/05/14 11:15	877-09-8	
Decachlorobiphenyl (S)	71	%.	55-130	1	10/03/14 10:24	10/05/14 11:15	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.6**	mg/kg	1.3	1	10/03/14 08:15	10/11/14 01:49	7440-38-2	
Cadmium	**0.26**	mg/kg	0.19	1	10/03/14 08:15	10/11/14 01:49	7440-43-9	
Chromium	**17.5**	mg/kg	0.63	1	10/03/14 08:15	10/11/14 01:49	7440-47-3	
Copper	**14.2**	mg/kg	0.63	1	10/03/14 08:15	10/11/14 01:49	7440-50-8	
Lead	**14.8**	mg/kg	1.3	1	10/03/14 08:15	10/11/14 01:49	7439-92-1	
Nickel	**14.2**	mg/kg	1.3	1	10/03/14 08:15	10/11/14 01:49	7440-02-0	
Zinc	**65.0**	mg/kg	1.3	1	10/03/14 08:15	10/11/14 01:49	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.070**	mg/kg	0.031	1	10/03/14 09:36	10/03/14 16:43	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**37.8**	%	0.10	1		10/01/14 16:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	83-32-9	
Acenaphthylene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	208-96-8	
Anthracene	**19.1**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	120-12-7	
Benzo(a)anthracene	**43.1**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	56-55-3	
Benzo(a)pyrene	**51.5**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	50-32-8	
Benzo(b)fluoranthene	**72.5**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	205-99-2	
Benzo(e)pyrene	**34.9**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	192-97-2	
Benzo(g,h,i)perylene	**38.7**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	191-24-2	
Benzo(k)fluoranthene	**29.0**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	207-08-9	
2-Chloronaphthalene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	91-58-7	L2
Chrysene	**54.0**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	53-70-3	
Dibenzofuran	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	132-64-9	
Fluoranthene	**74.2**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	206-44-0	
Fluorene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	86-73-7	
Indeno(1,2,3-cd)pyrene	**32.8**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1009-CH (15CM) **Lab ID: 10281597071** Collected: 09/18/14 14:50 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	90-12-0	
2-Methylnaphthalene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	91-57-6	
Naphthalene	ND	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	91-20-3	
Phenanthrene	**25.6**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	85-01-8	
Pyrene	**62.8**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**78.8**	ug/kg	16.1	1	10/02/14 07:48	10/04/14 00:26		
Total PAHs	**538**	ug/kg		1	10/02/14 07:48	10/04/14 00:26	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	66	%.	30-150	1	10/02/14 07:48	10/04/14 00:26	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	10/02/14 07:48	10/04/14 00:26	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1009-CH (50CM) **Lab ID: 10281597072** Collected: 09/18/14 14:55 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	49.9	1	10/06/14 08:45	10/07/14 18:25	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	50-128	1	10/06/14 08:45	10/07/14 18:25	877-09-8	
Decachlorobiphenyl (S)	89	%.	55-130	1	10/06/14 08:45	10/07/14 18:25	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.7**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 01:58	7440-38-2	
Cadmium	ND	mg/kg	0.22	1	10/03/14 08:15	10/11/14 01:58	7440-43-9	
Chromium	**16.0**	mg/kg	0.74	1	10/03/14 08:15	10/11/14 01:58	7440-47-3	
Copper	**11.5**	mg/kg	0.74	1	10/03/14 08:15	10/11/14 01:58	7440-50-8	
Lead	**6.4**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 01:58	7439-92-1	
Nickel	**13.9**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 01:58	7440-02-0	
Zinc	**34.5**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 01:58	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.030	1	10/03/14 09:36	10/03/14 16:45	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**34.1**	%	0.10	1		10/01/14 16:06		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	83-32-9	
Acenaphthylene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	208-96-8	
Anthracene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	120-12-7	
Benzo(a)anthracene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	56-55-3	
Benzo(a)pyrene	**15.6**	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	50-32-8	
Benzo(b)fluoranthene	**23.3**	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	205-99-2	
Benzo(e)pyrene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	207-08-9	
2-Chloronaphthalene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	91-58-7	L2
Chrysene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	53-70-3	
Dibenzofuran	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	132-64-9	
Fluoranthene	**21.2**	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	206-44-0	
Fluorene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1009-CH (50CM) **Lab ID: 10281597072** Collected: 09/18/14 14:55 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	90-12-0	
2-Methylnaphthalene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	91-57-6	
Naphthalene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	91-20-3	
Phenanthrene	ND	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	85-01-8	
Pyrene	**18.1**	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**31.1**	ug/kg	15.1	1	10/02/14 07:48	10/04/14 00:48		
Total PAHs	**78.2**	ug/kg		1	10/02/14 07:48	10/04/14 00:48	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	62	%.	30-150	1	10/02/14 07:48	10/04/14 00:48	321-60-8	
Terphenyl-d14 (S)	72	%.	30-150	1	10/02/14 07:48	10/04/14 00:48	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1005-CH (15CM) **Lab ID: 10281597073** Collected: 09/18/14 15:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	68.4	1	10/03/14 10:24	10/05/14 11:46	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	68	%.	50-128	1	10/03/14 10:24	10/05/14 11:46	877-09-8	
Decachlorobiphenyl (S)	76	%.	55-130	1	10/03/14 10:24	10/05/14 11:46	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.6**	mg/kg	1.7	1	10/03/14 08:15	10/11/14 02:01	7440-38-2	
Cadmium	**0.69**	mg/kg	0.25	1	10/03/14 08:15	10/11/14 02:01	7440-43-9	
Chromium	**27.4**	mg/kg	0.85	1	10/03/14 08:15	10/11/14 02:01	7440-47-3	
Copper	**27.5**	mg/kg	0.85	1	10/03/14 08:15	10/11/14 02:01	7440-50-8	
Lead	**33.1**	mg/kg	1.7	1	10/03/14 08:15	10/11/14 02:01	7439-92-1	
Nickel	**22.8**	mg/kg	1.7	1	10/03/14 08:15	10/11/14 02:01	7440-02-0	
Zinc	**146**	mg/kg	1.7	1	10/03/14 08:15	10/11/14 02:01	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.24**	mg/kg	0.038	1	10/03/14 09:36	10/03/14 16:47	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**51.7**	%	0.10	1		10/01/14 16:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	83-32-9	
Acenaphthylene	**34.0**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	208-96-8	
Anthracene	**64.6**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	120-12-7	
Benzo(a)anthracene	**242**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	56-55-3	
Benzo(a)pyrene	**285**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	50-32-8	
Benzo(b)fluoranthene	**343**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	205-99-2	
Benzo(e)pyrene	**173**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	192-97-2	
Benzo(g,h,i)perylene	**181**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	191-24-2	
Benzo(k)fluoranthene	**136**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	207-08-9	
2-Chloronaphthalene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	91-58-7	L2
Chrysene	**279**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	53-70-3	
Dibenzofuran	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	132-64-9	
Fluoranthene	**341**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	206-44-0	
Fluorene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	86-73-7	
Indeno(1,2,3-cd)pyrene	**150**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1005-CH (15CM) **Lab ID: 10281597073** Collected: 09/18/14 15:25 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	90-12-0	
2-Methylnaphthalene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	91-57-6	
Naphthalene	ND	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	91-20-3	
Phenanthrene	**108**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	85-01-8	
Pyrene	**307**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**386**	ug/kg	20.7	1	10/02/14 07:48	10/04/14 01:10		
Total PAHs	**2640**	ug/kg		1	10/02/14 07:48	10/04/14 01:10	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	47	%.	30-150	1	10/02/14 07:48	10/04/14 01:10	321-60-8	
Terphenyl-d14 (S)	82	%.	30-150	1	10/02/14 07:48	10/04/14 01:10	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1005-CH (50CM) **Lab ID: 10281597074** Collected: 09/18/14 15:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	69.8	1	10/03/14 10:24	10/05/14 12:02	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	62	%.	50-128	1	10/03/14 10:24	10/05/14 12:02	877-09-8	
Decachlorobiphenyl (S)	67	%.	55-130	1	10/03/14 10:24	10/05/14 12:02	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**3.0**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 02:04	7440-38-2	
Cadmium	**0.26**	mg/kg	0.23	1	10/03/14 08:15	10/11/14 02:04	7440-43-9	
Chromium	**26.6**	mg/kg	0.75	1	10/03/14 08:15	10/11/14 02:04	7440-47-3	
Copper	**20.2**	mg/kg	0.75	1	10/03/14 08:15	10/11/14 02:04	7440-50-8	
Lead	**9.5**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 02:04	7439-92-1	
Nickel	**20.7**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 02:04	7440-02-0	
Zinc	**63.0**	mg/kg	1.5	1	10/03/14 08:15	10/11/14 02:04	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.053**	mg/kg	0.036	1	10/03/14 09:36	10/03/14 16:50	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**52.7**	%	0.10	1		10/01/14 16:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	83-32-9	
Acenaphthylene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	208-96-8	
Anthracene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	120-12-7	
Benzo(a)anthracene	**30.2**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	56-55-3	
Benzo(a)pyrene	**36.4**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	50-32-8	
Benzo(b)fluoranthene	**45.4**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	205-99-2	
Benzo(e)pyrene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	192-97-2	
Benzo(g,h,i)perylene	**24.6**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	207-08-9	
2-Chloronaphthalene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	91-58-7	L2
Chrysene	**30.5**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	53-70-3	
Dibenzofuran	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	132-64-9	
Fluoranthene	**54.6**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	206-44-0	
Fluorene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1005-CH (50CM) **Lab ID: 10281597074** Collected: 09/18/14 15:30 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	90-12-0	
2-Methylnaphthalene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	91-57-6	
Naphthalene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	91-20-3	
Phenanthrene	ND	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	85-01-8	
Pyrene	**46.8**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**60.3**	ug/kg	21.1	1	10/02/14 07:48	10/04/14 01:32		
Total PAHs	**269**	ug/kg		1	10/02/14 07:48	10/04/14 01:32	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	62	%.	30-150	1	10/02/14 07:48	10/04/14 01:32	321-60-8	
Terphenyl-d14 (S)	72	%.	30-150	1	10/02/14 07:48	10/04/14 01:32	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1002-CH (15CM) **Lab ID: 10281597075** Collected: 09/18/14 16:05 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	91.5	1	10/03/14 10:24	10/05/14 12:18	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	50-128	1	10/03/14 10:24	10/05/14 12:18	877-09-8	
Decachlorobiphenyl (S)	84	%.	55-130	1	10/03/14 10:24	10/05/14 12:18	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.6**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:07	7440-38-2	
Cadmium	**0.44**	mg/kg	0.33	1	10/03/14 08:15	10/11/14 02:07	7440-43-9	
Chromium	**33.9**	mg/kg	1.1	1	10/03/14 08:15	10/11/14 02:07	7440-47-3	
Copper	**29.9**	mg/kg	1.1	1	10/03/14 08:15	10/11/14 02:07	7440-50-8	
Lead	**24.0**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:07	7439-92-1	
Nickel	**26.5**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:07	7440-02-0	
Zinc	**118**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:07	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.15**	mg/kg	0.054	1	10/03/14 09:36	10/03/14 16:52	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**64.1**	%	0.10	1		10/01/14 16:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	83-32-9	
Acenaphthylene	**29.2**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	208-96-8	
Anthracene	**116**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	120-12-7	
Benzo(a)anthracene	**144**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	56-55-3	
Benzo(a)pyrene	**160**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	50-32-8	
Benzo(b)fluoranthene	**231**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	205-99-2	
Benzo(e)pyrene	**110**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	192-97-2	
Benzo(g,h,i)perylene	**109**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	191-24-2	
Benzo(k)fluoranthene	**86.9**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	207-08-9	
2-Chloronaphthalene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	91-58-7	L2
Chrysene	**225**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	53-70-3	
Dibenzofuran	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	132-64-9	
Fluoranthene	**268**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	206-44-0	
Fluorene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	86-73-7	
Indeno(1,2,3-cd)pyrene	**93.7**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1002-CH (15CM) **Lab ID: 10281597075** Collected: 09/18/14 16:05 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	90-12-0	
2-Methylnaphthalene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	91-57-6	
Naphthalene	ND	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	91-20-3	
Phenanthrene	**101**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	85-01-8	
Pyrene	**234**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**233**	ug/kg	27.8	1	10/02/14 07:48	10/04/14 01:54		
Total PAHs	**1910**	ug/kg		1	10/02/14 07:48	10/04/14 01:54	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	64	%.	30-150	1	10/02/14 07:48	10/04/14 01:54	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	10/02/14 07:48	10/04/14 01:54	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1002-CH (50CM) **Lab ID: 10281597076** Collected: 09/18/14 16:10 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	83.2	1	10/03/14 10:24	10/05/14 12:34	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	61	%.	50-128	1	10/03/14 10:24	10/05/14 12:34	877-09-8	
Decachlorobiphenyl (S)	69	%.	55-130	1	10/03/14 10:24	10/05/14 12:34	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.3**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:10	7440-38-2	
Cadmium	**0.51**	mg/kg	0.33	1	10/03/14 08:15	10/11/14 02:10	7440-43-9	
Chromium	**38.1**	mg/kg	1.1	1	10/03/14 08:15	10/11/14 02:10	7440-47-3	
Copper	**32.0**	mg/kg	1.1	1	10/03/14 08:15	10/11/14 02:10	7440-50-8	
Lead	**35.4**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:10	7439-92-1	
Nickel	**29.4**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:10	7440-02-0	
Zinc	**139**	mg/kg	2.2	1	10/03/14 08:15	10/11/14 02:10	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.19**	mg/kg	0.044	1	10/03/14 09:36	10/03/14 16:54	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**60.3**	%	0.10	1		10/01/14 16:07		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	83-32-9	
Acenaphthylene	**45.7**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	208-96-8	
Anthracene	**109**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	120-12-7	
Benzo(a)anthracene	**246**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	56-55-3	M1
Benzo(a)pyrene	**287**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	50-32-8	M1
Benzo(b)fluoranthene	**358**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	205-99-2	M1
Benzo(e)pyrene	**211**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	192-97-2	M1
Benzo(g,h,i)perylene	**201**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	191-24-2	
Benzo(k)fluoranthene	**195**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	207-08-9	M1
2-Chloronaphthalene	ND	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	91-58-7	L2
Chrysene	**354**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	218-01-9	M1
Dibenz(a,h)anthracene	**58.6**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	53-70-3	
Dibenzofuran	ND	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	132-64-9	
Fluoranthene	**440**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	206-44-0	M1
Fluorene	**35.0**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	86-73-7	
Indeno(1,2,3-cd)pyrene	**167**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1002-CH (50CM) **Lab ID: 10281597076** Collected: 09/18/14 16:10 Received: 09/19/14 18:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	90-12-0	
2-Methylnaphthalene	**28.1**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	91-57-6	
Naphthalene	**58.2**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	91-20-3	
Phenanthrene	**204**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	85-01-8	
Pyrene	**442**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41	129-00-0	M1
Total BaP Eq. MN 2006sh. ND=RL	**420**	ug/kg	25.2	1	10/02/14 13:02	10/03/14 13:41		
Total PAHs	**3410**	ug/kg		1	10/02/14 13:02	10/03/14 13:41	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	73	%.	30-150	1	10/02/14 13:02	10/03/14 13:41	321-60-8	
Terphenyl-d14 (S)	83	%.	30-150	1	10/02/14 13:02	10/03/14 13:41	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (15cm) **Lab ID: 10281597077** Collected: 10/01/14 07:50 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	36.3	1	10/08/14 09:50	10/14/14 00:28	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	91	%.	50-128	1	10/08/14 09:50	10/14/14 00:28	877-09-8	
Decachlorobiphenyl (S)	84	%.	55-130	1	10/08/14 09:50	10/14/14 00:28	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.2**	mg/kg	0.76	1	10/09/14 10:45	10/14/14 15:20	7440-38-2	
Cadmium	**0.12**	mg/kg	0.11	1	10/09/14 10:45	10/14/14 15:20	7440-43-9	
Chromium	**7.0**	mg/kg	0.38	1	10/09/14 10:45	10/14/14 15:20	7440-47-3	
Copper	**76.4**	mg/kg	0.38	1	10/09/14 10:45	10/14/14 15:20	7440-50-8	
Lead	**7.9**	mg/kg	0.76	1	10/09/14 10:45	10/14/14 15:20	7439-92-1	
Nickel	**12.0**	mg/kg	0.76	1	10/09/14 10:45	10/14/14 15:20	7440-02-0	
Zinc	**35.4**	mg/kg	0.76	1	10/09/14 10:45	10/14/14 15:20	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.020**	mg/kg	0.020	1	10/14/14 17:40	10/15/14 10:33	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**9.1**	%	0.10	1		10/09/14 11:34		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	83-32-9	
Acenaphthylene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	208-96-8	
Anthracene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	120-12-7	
Benzo(a)anthracene	**18.0**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	56-55-3	
Benzo(a)pyrene	**19.8**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	50-32-8	
Benzo(b)fluoranthene	**23.3**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	205-99-2	
Benzo(e)pyrene	**13.5**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	192-97-2	
Benzo(g,h,i)perylene	**16.7**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	207-08-9	
2-Chloronaphthalene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	91-58-7	L2
Chrysene	**20.8**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	53-70-3	
Dibenzofuran	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	132-64-9	
Fluoranthene	**34.6**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	206-44-0	
Fluorene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (15cm) **Lab ID: 10281597077** Collected: 10/01/14 07:50 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	90-12-0	
2-Methylnaphthalene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	91-57-6	
Naphthalene	ND	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	91-20-3	
Phenanthrene	**24.1**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	85-01-8	
Pyrene	**32.9**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**32.3**	ug/kg	10.8	1	10/09/14 12:20	10/14/14 10:28		
Total PAHs	**204**	ug/kg		1	10/09/14 12:20	10/14/14 10:28	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	10/09/14 12:20	10/14/14 10:28	321-60-8	
Terphenyl-d14 (S)	84	%.	30-150	1	10/09/14 12:20	10/14/14 10:28	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (50cm) **Lab ID: 10281597078** Collected: 10/01/14 07:55 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	36.6	1	10/08/14 09:50	10/14/14 00:44	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	91	%.	50-128	1	10/08/14 09:50	10/14/14 00:44	877-09-8	
Decachlorobiphenyl (S)	84	%.	55-130	1	10/08/14 09:50	10/14/14 00:44	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	0.86	1	10/09/14 10:45	10/14/14 15:26	7440-38-2	
Cadmium	ND	mg/kg	0.13	1	10/09/14 10:45	10/14/14 15:26	7440-43-9	
Chromium	**5.1**	mg/kg	0.43	1	10/09/14 10:45	10/14/14 15:26	7440-47-3	
Copper	**20.7**	mg/kg	0.43	1	10/09/14 10:45	10/14/14 15:26	7440-50-8	
Lead	**5.3**	mg/kg	0.86	1	10/09/14 10:45	10/14/14 15:26	7439-92-1	
Nickel	**6.6**	mg/kg	0.86	1	10/09/14 10:45	10/14/14 15:26	7440-02-0	
Zinc	**23.1**	mg/kg	0.86	1	10/09/14 10:45	10/14/14 15:26	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.021	1	10/14/14 17:40	10/15/14 10:39	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**9.8**	%	0.10	1		10/09/14 11:34		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**12.6**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	83-32-9	
Acenaphthylene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	208-96-8	
Anthracene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	120-12-7	
Benzo(a)anthracene	**19.1**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	56-55-3	
Benzo(a)pyrene	**17.7**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	50-32-8	
Benzo(b)fluoranthene	**24.3**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	205-99-2	
Benzo(e)pyrene	**13.9**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	192-97-2	
Benzo(g,h,i)perylene	**13.4**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	207-08-9	
2-Chloronaphthalene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	91-58-7	L2
Chrysene	**25.7**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	53-70-3	
Dibenzofuran	**12.5**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	132-64-9	
Fluoranthene	**60.7**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	206-44-0	
Fluorene	**11.6**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (50cm) **Lab ID: 10281597078** Collected: 10/01/14 07:55 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**23.2**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	90-12-0	
2-Methylnaphthalene	**31.9**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	91-57-6	
Naphthalene	**18.2**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	91-20-3	
Phenanthrene	**44.2**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	85-01-8	
Pyrene	**55.8**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**30.6**	ug/kg	10.9	1	10/09/14 12:20	10/14/14 10:50		
Total PAHs	**330**	ug/kg		1	10/09/14 12:20	10/14/14 10:50	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	64	%.	30-150	1	10/09/14 12:20	10/14/14 10:50	321-60-8	
Terphenyl-d14 (S)	75	%.	30-150	1	10/09/14 12:20	10/14/14 10:50	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (100cm) **Lab ID: 10281597079** Collected: 10/01/14 08:00 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	38.8	1	10/08/14 09:50	10/14/14 01:00	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	50-128	1	10/08/14 09:50	10/14/14 01:00	877-09-8	
Decachlorobiphenyl (S)	78	%.	55-130	1	10/08/14 09:50	10/14/14 01:00	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**6.5**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:32	7440-38-2	
Cadmium	ND	mg/kg	0.17	1	10/09/14 10:45	10/14/14 15:32	7440-43-9	
Chromium	**4.2**	mg/kg	0.56	1	10/09/14 10:45	10/14/14 15:32	7440-47-3	
Copper	**10.3**	mg/kg	0.56	1	10/09/14 10:45	10/14/14 15:32	7440-50-8	
Lead	**11.2**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:32	7439-92-1	
Nickel	**5.4**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:32	7440-02-0	
Zinc	**18.5**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:32	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.041**	mg/kg	0.023	1	10/14/14 17:40	10/15/14 10:41	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.2**	%	0.10	1		10/09/14 11:35		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**29.3**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	83-32-9	
Acenaphthylene	ND	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	208-96-8	
Anthracene	**12.9**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	120-12-7	
Benzo(a)anthracene	**28.8**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	56-55-3	
Benzo(a)pyrene	**23.1**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	50-32-8	
Benzo(b)fluoranthene	**36.7**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	205-99-2	
Benzo(e)pyrene	**25.7**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	192-97-2	
Benzo(g,h,i)perylene	**19.8**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	207-08-9	
2-Chloronaphthalene	ND	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	91-58-7	L2
Chrysene	**47.0**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	53-70-3	
Dibenzofuran	**45.6**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	132-64-9	
Fluoranthene	**91.2**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	206-44-0	
Fluorene	**24.8**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1037-CH (100cm) **Lab ID: 10281597079** Collected: 10/01/14 08:00 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**135**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	90-12-0	
2-Methylnaphthalene	**184**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	91-57-6	
Naphthalene	**105**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	91-20-3	
Phenanthrene	**123**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	85-01-8	
Pyrene	**80.6**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**39.1**	ug/kg	11.7	1	10/09/14 12:20	10/14/14 11:12		
Total PAHs	**693**	ug/kg		1	10/09/14 12:20	10/14/14 11:12	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	70	%.	30-150	1	10/09/14 12:20	10/14/14 11:12	321-60-8	
Terphenyl-d14 (S)	83	%.	30-150	1	10/09/14 12:20	10/14/14 11:12	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (15cm) **Lab ID: 10281597080** Collected: 10/01/14 09:20 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.2	1	10/08/14 09:50	10/14/14 01:16	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	102	%.	50-128	1	10/08/14 09:50	10/14/14 01:16	877-09-8	
Decachlorobiphenyl (S)	93	%.	55-130	1	10/08/14 09:50	10/14/14 01:16	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.0**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:38	7440-38-2	
Cadmium	**0.24**	mg/kg	0.16	1	10/09/14 10:45	10/14/14 15:38	7440-43-9	
Chromium	**15.3**	mg/kg	0.53	1	10/09/14 10:45	10/14/14 15:38	7440-47-3	
Copper	**19.7**	mg/kg	0.53	1	10/09/14 10:45	10/14/14 15:38	7440-50-8	
Lead	**20.4**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:38	7439-92-1	
Nickel	**14.0**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:38	7440-02-0	
Zinc	**60.3**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:38	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.069**	mg/kg	0.021	1	10/14/14 17:40	10/15/14 10:43	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**19.8**	%	0.10	1		10/09/14 11:35		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	83-32-9	
Acenaphthylene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	208-96-8	
Anthracene	**25.4**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	120-12-7	
Benzo(a)anthracene	**58.1**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	56-55-3	
Benzo(a)pyrene	**61.2**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	50-32-8	
Benzo(b)fluoranthene	**85.8**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	205-99-2	
Benzo(e)pyrene	**41.8**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	192-97-2	
Benzo(g,h,i)perylene	**41.6**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	191-24-2	
Benzo(k)fluoranthene	**29.7**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	91-58-7	L2
Chrysene	**65.5**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	53-70-3	
Dibenzofuran	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	132-64-9	
Fluoranthene	**128**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	206-44-0	
Fluorene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	86-73-7	
Indeno(1,2,3-cd)pyrene	**34.5**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (15cm) **Lab ID: 10281597080** Collected: 10/01/14 09:20 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	90-12-0	
2-Methylnaphthalene	**16.2**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	91-57-6	
Naphthalene	**16.2**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	91-20-3	
Phenanthrene	**86.8**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	85-01-8	
Pyrene	**119**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**89.7**	ug/kg	12.5	1	10/09/14 12:20	10/14/14 11:34		
Total PAHs	**794**	ug/kg		1	10/09/14 12:20	10/14/14 11:34	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	67	%.	30-150	1	10/09/14 12:20	10/14/14 11:34	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	10/09/14 12:20	10/14/14 11:34	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (50cm) **Lab ID: 10281597081** Collected: 10/01/14 09:25 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	38.9	1	10/08/14 09:50	10/14/14 01:32	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	94	%.	50-128	1	10/08/14 09:50	10/14/14 01:32	877-09-8	
Decachlorobiphenyl (S)	87	%.	55-130	1	10/08/14 09:50	10/14/14 01:32	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.0**	mg/kg	0.79	1	10/09/14 10:45	10/14/14 15:43	7440-38-2	
Cadmium	**0.13**	mg/kg	0.12	1	10/09/14 10:45	10/14/14 15:43	7440-43-9	
Chromium	**18.8**	mg/kg	0.40	1	10/09/14 10:45	10/14/14 15:43	7440-47-3	
Copper	**21.3**	mg/kg	0.40	1	10/09/14 10:45	10/14/14 15:43	7440-50-8	
Lead	**11.6**	mg/kg	0.79	1	10/09/14 10:45	10/14/14 15:43	7439-92-1	
Nickel	**17.6**	mg/kg	0.79	1	10/09/14 10:45	10/14/14 15:43	7440-02-0	
Zinc	**41.5**	mg/kg	0.79	1	10/09/14 10:45	10/14/14 15:43	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.043**	mg/kg	0.021	1	10/14/14 17:40	10/15/14 10:45	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.5**	%	0.10	1		10/09/14 13:00		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	83-32-9	
Acenaphthylene	ND	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	208-96-8	
Anthracene	**35.3**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	120-12-7	
Benzo(a)anthracene	**81.7**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	56-55-3	
Benzo(a)pyrene	**78.1**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	50-32-8	
Benzo(b)fluoranthene	**98.9**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	205-99-2	
Benzo(e)pyrene	**51.0**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	192-97-2	
Benzo(g,h,i)perylene	**51.1**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	191-24-2	
Benzo(k)fluoranthene	**35.7**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	207-08-9	
2-Chloronaphthalene	ND	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	91-58-7	L2
Chrysene	**84.8**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	53-70-3	
Dibenzofuran	**12.8**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	132-64-9	
Fluoranthene	**153**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	206-44-0	
Fluorene	**14.1**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	86-73-7	
Indeno(1,2,3-cd)pyrene	**39.6**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (50cm) **Lab ID: 10281597081** Collected: 10/01/14 09:25 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**19.7**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	90-12-0	
2-Methylnaphthalene	**28.0**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	91-57-6	
Naphthalene	**17.5**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	91-20-3	
Phenanthrene	**113**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	85-01-8	
Pyrene	**142**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**111**	ug/kg	11.8	1	10/09/14 12:20	10/14/14 11:56		
Total PAHs	**1010**	ug/kg		1	10/09/14 12:20	10/14/14 11:56	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	69	%.	30-150	1	10/09/14 12:20	10/14/14 11:56	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	10/09/14 12:20	10/14/14 11:56	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (100cm) **Lab ID: 10281597082** Collected: 10/01/14 09:30 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.5	1	10/08/14 09:50	10/14/14 01:48	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	96	%.	50-128	1	10/08/14 09:50	10/14/14 01:48	877-09-8	
Decachlorobiphenyl (S)	91	%.	55-130	1	10/08/14 09:50	10/14/14 01:48	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**2.1**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:48	7440-38-2	
Cadmium	ND	mg/kg	0.17	1	10/09/14 10:45	10/14/14 15:48	7440-43-9	
Chromium	**19.7**	mg/kg	0.57	1	10/09/14 10:45	10/14/14 15:48	7440-47-3	
Copper	**19.9**	mg/kg	0.57	1	10/09/14 10:45	10/14/14 15:48	7440-50-8	
Lead	**12.5**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:48	7439-92-1	
Nickel	**15.7**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:48	7440-02-0	
Zinc	**41.0**	mg/kg	1.1	1	10/09/14 10:45	10/14/14 15:48	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.027**	mg/kg	0.022	1	10/14/14 17:40	10/15/14 10:47	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.4**	%	0.10	1		10/09/14 13:01		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	83-32-9	
Acenaphthylene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	208-96-8	
Anthracene	**27.2**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	120-12-7	
Benzo(a)anthracene	**36.5**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	56-55-3	
Benzo(a)pyrene	**39.5**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	50-32-8	
Benzo(b)fluoranthene	**52.0**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	205-99-2	
Benzo(e)pyrene	**27.1**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	192-97-2	
Benzo(g,h,i)perylene	**28.3**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	191-24-2	
Benzo(k)fluoranthene	**17.9**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	207-08-9	
2-Chloronaphthalene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	91-58-7	L2
Chrysene	**42.3**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	53-70-3	
Dibenzofuran	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	132-64-9	
Fluoranthene	**80.8**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	206-44-0	
Fluorene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	86-73-7	
Indeno(1,2,3-cd)pyrene	**21.8**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: SS1035-CH (100cm) **Lab ID: 10281597082** Collected: 10/01/14 09:30 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	91-57-6	
Naphthalene	ND	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	91-20-3	
Phenanthrene	**63.0**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	85-01-8	
Pyrene	**77.4**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**59.8**	ug/kg	12.6	1	10/09/14 12:20	10/14/14 12:18		
Total PAHs	**514**	ug/kg		1	10/09/14 12:20	10/14/14 12:18	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	65	%.	30-150	1	10/09/14 12:20	10/14/14 12:18	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	10/09/14 12:20	10/14/14 12:18	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: DUP-03-CH **Lab ID: 10281597083** Collected: 10/01/14 00:00 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	38.7	1	10/08/14 09:50	10/14/14 02:04	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	50-128	1	10/08/14 09:50	10/14/14 02:04	877-09-8	
Decachlorobiphenyl (S)	85	%.	55-130	1	10/08/14 09:50	10/14/14 02:04	2051-24-3	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Arsenic	**5.0**	mg/kg	0.88	1	10/09/14 10:45	10/14/14 15:54	7440-38-2	
Cadmium	**0.14**	mg/kg	0.13	1	10/09/14 10:45	10/14/14 15:54	7440-43-9	
Chromium	**5.1**	mg/kg	0.44	1	10/09/14 10:45	10/14/14 15:54	7440-47-3	
Copper	**9.7**	mg/kg	0.44	1	10/09/14 10:45	10/14/14 15:54	7440-50-8	
Lead	**12.9**	mg/kg	0.88	1	10/09/14 10:45	10/14/14 15:54	7439-92-1	
Nickel	**5.6**	mg/kg	0.88	1	10/09/14 10:45	10/14/14 15:54	7440-02-0	
Zinc	**19.0**	mg/kg	0.88	1	10/09/14 10:45	10/14/14 15:54	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.052**	mg/kg	0.021	1	10/14/14 17:40	10/15/14 10:49	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.0**	%	0.10	1		10/09/14 13:01		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	**37.8**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	83-32-9	
Acenaphthylene	ND	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	208-96-8	
Anthracene	**16.6**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	120-12-7	
Benzo(a)anthracene	**46.9**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	56-55-3	
Benzo(a)pyrene	**33.3**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	50-32-8	
Benzo(b)fluoranthene	**58.3**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	205-99-2	
Benzo(e)pyrene	**38.5**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	192-97-2	
Benzo(g,h,i)perylene	**28.0**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	191-24-2	
Benzo(k)fluoranthene	**13.0**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	207-08-9	
2-Chloronaphthalene	ND	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	91-58-7	L2
Chrysene	**78.8**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	53-70-3	
Dibenzofuran	**63.4**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	132-64-9	
Fluoranthene	**136**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	206-44-0	
Fluorene	**31.5**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**15.8**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	193-39-5	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: DUP-03-CH **Lab ID: 10281597083** Collected: 10/01/14 00:00 Received: 10/01/14 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
1-Methylnaphthalene	**195**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	90-12-0	
2-Methylnaphthalene	**260**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	91-57-6	
Naphthalene	**146**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	91-20-3	
Phenanthrene	**172**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	85-01-8	
Pyrene	**133**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40	129-00-0	
Total BaP Eq. MN 2006sh. ND=RL	**53.9**	ug/kg	11.5	1	10/09/14 12:20	10/14/14 12:40		
Total PAHs	**1050**	ug/kg		1	10/09/14 12:20	10/14/14 12:40	TOTPAH	N2
Surrogates								
2-Fluorobiphenyl (S)	66	%.	30-150	1	10/09/14 12:20	10/14/14 12:40	321-60-8	
Terphenyl-d14 (S)	81	%.	30-150	1	10/09/14 12:20	10/14/14 12:40	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Sample: EB-04-CH **Lab ID: 10281597084** Collected: 10/01/14 10:30 Received: 10/01/14 13:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510							
Acenaphthene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	83-32-9	L2
Acenaphthylene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	208-96-8	L2
Anthracene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	207-08-9	
Chrysene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	53-70-3	
Fluoranthene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	206-44-0	
Fluorene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	86-73-7	L2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	193-39-5	
Naphthalene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	91-20-3	L2
Phenanthrene	**0.096**	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	85-01-8	
Pyrene	ND	ug/L	0.043	1	10/08/14 18:03	10/12/14 12:50	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	58	%.	54-125	1	10/08/14 18:03	10/12/14 12:50	321-60-8	1M
Terphenyl-d14 (S)	73	%.	68-125	1	10/08/14 18:03	10/12/14 12:50	1718-51-0	

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11678 Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

METHOD BLANK: 1792539 Matrix: Solid
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	09/30/14 14:28	

LABORATORY CONTROL SAMPLE: 1792540

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.44	0.39	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1792541 1792542

Parameter	Units	10281597001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.20	.92	1.1	1.0	1.0	91	79	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11679 Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

METHOD BLANK: 1792543 Matrix: Solid
Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.019	10/02/14 16:01	

LABORATORY CONTROL SAMPLE: 1792544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.44	0.46	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1792545 1792546

Parameter	Units	10281597039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.025	.63	.53	0.66	0.54	101	99	75-125	19	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11680 | Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B | Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597043, 10281597044

METHOD BLANK: 1792547 | Matrix: Solid
Associated Lab Samples: 10281597043, 10281597044

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.017	09/23/14 13:57	

LABORATORY CONTROL SAMPLE: 1792548

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.42	0.42	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1792549 1792550

Parameter	Units	10281421002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.062	.63	.71	0.71	0.80	104	104	75-125	12	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11766 Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070

METHOD BLANK: 1800317 Matrix: Solid
Associated Lab Samples: 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.019	10/03/14 15:37	

LABORATORY CONTROL SAMPLE: 1800318

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.45	0.38	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1800319 1800320

Parameter	Units	10281597045 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.20	1.4	1.6	1.4	1.6	85	86	75-125	14	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11796 Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597071, 10281597072, 10281597073, 10281597074, 10281597075, 10281597076

METHOD BLANK: 1805695 Matrix: Solid
Associated Lab Samples: 10281597071, 10281597072, 10281597073, 10281597074, 10281597075, 10281597076

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	10/03/14 16:39	

LABORATORY CONTROL SAMPLE: 1805696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.48	0.48	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1805697 1805698

Parameter	Units	10282500001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.020J	.64	.6	0.59	0.54	89	86	75-125	9	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MERP/11862 Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

METHOD BLANK: 1813355 Matrix: Solid
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	10/15/14 10:19	

LABORATORY CONTROL SAMPLE: 1813356

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.43	0.43	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1813357 1813358

Parameter	Units	10283772002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.020	.48	.45	0.46	0.42	90	87	75-125	9	20	H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49157 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

METHOD BLANK: 1792492 Matrix: Solid
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.85	10/05/14 04:05	
Cadmium	mg/kg	ND	0.13	10/05/14 04:05	
Chromium	mg/kg	ND	0.43	10/05/14 04:05	
Copper	mg/kg	ND	0.43	10/05/14 04:05	
Lead	mg/kg	ND	0.85	10/05/14 04:05	
Nickel	mg/kg	ND	0.85	10/05/14 04:05	
Zinc	mg/kg	ND	0.85	10/05/14 04:05	

LABORATORY CONTROL SAMPLE: 1792493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	47.6	43.9	92	80-120	
Cadmium	mg/kg	47.6	44.7	94	80-120	
Chromium	mg/kg	47.6	45.8	96	80-120	
Copper	mg/kg	47.6	45.5	95	80-120	
Lead	mg/kg	47.6	45.0	94	80-120	
Nickel	mg/kg	47.6	45.2	95	80-120	
Zinc	mg/kg	47.6	45.1	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1792494 1792495

Parameter	Units	10281597001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	6.4	81.5	88.1	69.9	73.8	78	76	75-125	5	20	
Cadmium	mg/kg	0.59	81.5	88.1	65.2	70.8	79	80	75-125	8	20	
Chromium	mg/kg	22.6	81.5	88.1	91.5	91.9	85	79	75-125	1	20	
Copper	mg/kg	22.8	81.5	88.1	90.9	93.0	84	80	75-125	2	20	
Lead	mg/kg	27.5	81.5	88.1	88.5	93.6	75	75	75-125	6	20	
Nickel	mg/kg	19.0	81.5	88.1	83.1	85.2	79	75	75-125	2	20	
Zinc	mg/kg	117	81.5	88.1	173	178	70	70	75-125	3	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49180 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

METHOD BLANK: 1793678 Matrix: Solid
Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.96	10/05/14 02:21	
Cadmium	mg/kg	ND	0.14	10/05/14 02:21	
Chromium	mg/kg	ND	0.48	10/05/14 02:21	
Copper	mg/kg	ND	0.48	10/05/14 02:21	
Lead	mg/kg	ND	0.96	10/05/14 02:21	
Nickel	mg/kg	ND	0.96	10/05/14 02:21	
Zinc	mg/kg	ND	0.96	10/05/14 02:21	

LABORATORY CONTROL SAMPLE: 1793679

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	44.6	41.4	93	80-120	
Cadmium	mg/kg	44.6	42.2	95	80-120	
Chromium	mg/kg	44.6	43.1	97	80-120	
Copper	mg/kg	44.6	43.2	97	80-120	
Lead	mg/kg	44.6	42.6	95	80-120	
Nickel	mg/kg	44.6	42.6	95	80-120	
Zinc	mg/kg	44.6	42.6	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1793682 1793683

Parameter	Units	10281597039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.5	55.1	43.5	46.3	37.0	81	81	75-125	23	20	R1
Cadmium	mg/kg	0.21	55.1	43.5	46.0	36.3	83	83	75-125	23	20	R1
Chromium	mg/kg	7.7	55.1	43.5	53.8	44.2	84	84	75-125	19	20	
Copper	mg/kg	6.3	55.1	43.5	53.3	43.0	85	84	75-125	21	20	R1
Lead	mg/kg	5.9	55.1	43.5	49.8	40.0	80	78	75-125	22	20	R1
Nickel	mg/kg	7.5	55.1	43.5	53.0	42.4	83	80	75-125	22	20	R1
Zinc	mg/kg	23.2	55.1	43.5	67.6	55.7	81	75	75-125	19	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49182 | Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 | Analysis Description: 6010C Solids
Associated Lab Samples: 10281597043, 10281597044

METHOD BLANK: 1793688 | Matrix: Solid
Associated Lab Samples: 10281597043, 10281597044

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.97	09/30/14 00:32	
Cadmium	mg/kg	ND	0.15	09/30/14 00:32	
Chromium	mg/kg	ND	0.49	09/30/14 00:32	
Copper	mg/kg	ND	0.49	09/30/14 00:32	
Lead	mg/kg	ND	0.97	09/30/14 00:32	
Nickel	mg/kg	ND	0.97	09/30/14 00:32	
Zinc	mg/kg	ND	0.97	09/30/14 00:32	

LABORATORY CONTROL SAMPLE: 1793689

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	49.5	46.5	94	80-120	
Cadmium	mg/kg	49.5	48.2	97	80-120	
Chromium	mg/kg	49.5	50.3	102	80-120	
Copper	mg/kg	49.5	50.1	101	80-120	
Lead	mg/kg	49.5	49.2	99	80-120	
Nickel	mg/kg	49.5	49.1	99	80-120	
Zinc	mg/kg	49.5	47.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1793690 1793691

Parameter	Units	10281869001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	ND	42.1	38.1	41.0	36.7	96	95	75-125	11	20	
Cadmium	mg/kg	ND	42.1	38.1	42.2	37.6	100	99	75-125	11	20	
Chromium	mg/kg	3.7	42.1	38.1	45.6	41.1	99	98	75-125	10	20	
Copper	mg/kg	2.2	42.1	38.1	46.0	42.3	104	105	75-125	8	20	
Lead	mg/kg	1.9	42.1	38.1	44.0	39.0	100	97	75-125	12	20	
Nickel	mg/kg	4.5	42.1	38.1	44.5	41.2	95	96	75-125	8	20	
Zinc	mg/kg	8.6	42.1	38.1	47.2	44.8	92	95	75-125	5	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49364 | Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 | Analysis Description: 6010C Solids
Associated Lab Samples: 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070

METHOD BLANK: 1800252 | Matrix: Solid
Associated Lab Samples: 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.81	10/03/14 19:13	
Cadmium	mg/kg	ND	0.12	10/03/14 19:13	
Chromium	mg/kg	ND	0.40	10/03/14 19:13	
Copper	mg/kg	ND	0.40	10/03/14 19:13	
Lead	mg/kg	ND	0.81	10/03/14 19:13	
Nickel	mg/kg	ND	0.81	10/03/14 19:13	
Zinc	mg/kg	ND	0.81	10/04/14 12:44	

LABORATORY CONTROL SAMPLE: 1800253

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	47.6	39.8	84	80-120	
Cadmium	mg/kg	47.6	39.6	83	80-120	
Chromium	mg/kg	47.6	41.4	87	80-120	
Copper	mg/kg	47.6	41.2	86	80-120	
Lead	mg/kg	47.6	38.5	81	80-120	
Nickel	mg/kg	47.6	40.6	85	80-120	
Zinc	mg/kg	47.6	42.7	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1800254 1800255

Parameter	Units	10281597045 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	ND	136	132	111	109	80	81	75-125	2	20	
Cadmium	mg/kg	0.82	136	132	108	107	78	80	75-125	1	20	
Chromium	mg/kg	38.7	136	132	143	145	76	81	75-125	1	20	
Copper	mg/kg	34.2	136	132	144	145	80	84	75-125	1	20	
Lead	mg/kg	36.9	136	132	133	134	70	74	75-125	1	20	M1
Nickel	mg/kg	26.9	136	132	130	130	76	78	75-125	0	20	
Zinc	mg/kg	142	136	132	250	259	79	88	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49439 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10281597071, 10281597072, 10281597073, 10281597074, 10281597075, 10281597076

METHOD BLANK: 1803212 Matrix: Solid
Associated Lab Samples: 10281597071, 10281597072, 10281597073, 10281597074, 10281597075, 10281597076

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.96	10/11/14 01:43	
Cadmium	mg/kg	ND	0.14	10/11/14 01:43	
Chromium	mg/kg	ND	0.48	10/11/14 01:43	
Copper	mg/kg	ND	0.48	10/11/14 01:43	
Lead	mg/kg	ND	0.96	10/11/14 01:43	
Nickel	mg/kg	ND	0.96	10/11/14 01:43	
Zinc	mg/kg	ND	0.96	10/11/14 01:43	

LABORATORY CONTROL SAMPLE: 1803213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	46.7	45.8	98	80-120	
Cadmium	mg/kg	46.7	46.0	98	80-120	
Chromium	mg/kg	46.7	47.3	101	80-120	
Copper	mg/kg	46.7	47.5	102	80-120	
Lead	mg/kg	46.7	46.3	99	80-120	
Nickel	mg/kg	46.7	47.1	101	80-120	
Zinc	mg/kg	46.7	46.5	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1803214 1803215

Parameter	Units	10281597071 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	3.6	69.3	78.8	65.3	72.5	89	87	75-125	10	20	
Cadmium	mg/kg	0.26	69.3	78.8	62.8	70.6	90	89	75-125	12	20	
Chromium	mg/kg	17.5	69.3	78.8	83.2	89.8	95	92	75-125	8	20	
Copper	mg/kg	14.2	69.3	78.8	79.1	86.3	94	92	75-125	9	20	
Lead	mg/kg	14.8	69.3	78.8	75.9	82.6	88	86	75-125	8	20	
Nickel	mg/kg	14.2	69.3	78.8	77.1	83.6	91	88	75-125	8	20	
Zinc	mg/kg	65.0	69.3	78.8	127	131	89	84	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49570 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

METHOD BLANK: 1808708 Matrix: Solid
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.69	10/14/14 15:11	
Cadmium	mg/kg	ND	0.10	10/14/14 15:11	
Chromium	mg/kg	ND	0.35	10/14/14 15:11	
Copper	mg/kg	ND	0.35	10/14/14 15:11	
Lead	mg/kg	ND	0.69	10/14/14 15:11	
Nickel	mg/kg	ND	0.69	10/14/14 15:11	
Zinc	mg/kg	ND	0.69	10/14/14 15:11	

LABORATORY CONTROL SAMPLE: 1808709

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	44.2	36.7	83	80-120	
Cadmium	mg/kg	44.2	35.8	81	80-120	
Chromium	mg/kg	44.2	38.8	88	80-120	
Copper	mg/kg	44.2	37.1	84	80-120	
Lead	mg/kg	44.2	35.5	80	80-120	
Nickel	mg/kg	44.2	37.2	84	80-120	
Zinc	mg/kg	44.2	36.1	82	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808710 1808711

Parameter	Units	10283630008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	8.0	45.8	39.3	38.7	39.0	67	79	75-125	1	20	M1
Cadmium	mg/kg	ND	45.8	39.3	35.6	29.9	78	76	75-125	17	20	
Chromium	mg/kg	6.7	45.8	39.3	40.3	39.7	73	84	75-125	1	20	M1
Copper	mg/kg	16.6	45.8	39.3	40.3	38.1	52	55	75-125	6	20	M1
Lead	mg/kg	4.3	45.8	39.3	36.4	30.7	70	67	75-125	17	20	M1
Nickel	mg/kg	6.0	45.8	39.3	37.5	34.4	69	72	75-125	9	20	M1
Zinc	mg/kg	21.7	45.8	39.3	42.4	49.6	45	71	75-125	16	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49311 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005

SAMPLE DUPLICATE: 1799271

Parameter	Units	10281445128 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	72.8	79.0	8	30	

SAMPLE DUPLICATE: 1799272

Parameter	Units	10281597005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	40.5	43.4	7	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49312 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

SAMPLE DUPLICATE: 1799273

Parameter	Units	10281597006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	52.7	53.0	1	30	

SAMPLE DUPLICATE: 1799274

Parameter	Units	10281718007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	34.4	33.2	4	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49377 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031

SAMPLE DUPLICATE: 1801275

Parameter	Units	10281597031 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	57.6	55.6	4	30	

SAMPLE DUPLICATE: 1801297

Parameter	Units	10282479002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.5	11.5	0	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49378 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042, 10281597043, 10281597044

SAMPLE DUPLICATE: 1801306

Parameter	Units	10281597039 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.3	21.2	4	30	

SAMPLE DUPLICATE: 1801328

Parameter	Units	10282107004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.8	14.0	23	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49414 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053

SAMPLE DUPLICATE: 1802695

Parameter	Units	10282140011 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.69	0.64	8	30	

SAMPLE DUPLICATE: 1802696

Parameter	Units	10281597053 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	44.9	43.4	3	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49469 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061

SAMPLE DUPLICATE: 1805044

Parameter	Units	10282007002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.8	11.9	10	30	

SAMPLE DUPLICATE: 1805062

Parameter	Units	10281597061 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	58.5	53.2	9	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49473 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597066, 10281597067, 10281597068, 10281597069, 10281597070, 10281597071, 10281597072, 10281597073, 10281597074, 10281597075, 10281597076

SAMPLE DUPLICATE: 1805269

Parameter	Units	10281597066 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	53.0	53.5	1	30	

SAMPLE DUPLICATE: 1805270

Parameter	Units	10281597076 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	60.3	59.9	1	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49654 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080

SAMPLE DUPLICATE: 1812274

Parameter	Units	10284308011 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.3	13.8	4	30	

SAMPLE DUPLICATE: 1812276

Parameter	Units	10283992012 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.7	10.1	6	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MPRP/49657 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10281597081, 10281597082, 10281597083

SAMPLE DUPLICATE: 1812396

Parameter	Units	10283071001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.0	11.2	1	30	

SAMPLE DUPLICATE: 1812439

Parameter	Units	10283616002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	34.5	37.0	7	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: MT/16949 Analysis Method: SM 4500-S2-D
QC Batch Method: SM 4500-S2-D Analysis Description: 4500S2D Sulfide Water
Associated Lab Samples: 10281597056, 10281597059, 10281597062, 10281597063, 10281597064

METHOD BLANK: 1800518 Matrix: Water
Associated Lab Samples: 10281597056, 10281597059, 10281597062, 10281597063, 10281597064

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	09/26/14 15:10	

LABORATORY CONTROL SAMPLE: 1800519

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	1	1.1	110	80-120	

MATRIX SPIKE SAMPLE: 1800520

Parameter	Units	10282335001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	ND	1	1.0	101	80-120	

MATRIX SPIKE SAMPLE: 1800522

Parameter	Units	10282729003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	<0.0082	1	1.1	108	80-120	

SAMPLE DUPLICATE: 1800521

Parameter	Units	10282757002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	.062J		20	

SAMPLE DUPLICATE: 1800523

Parameter	Units	10282729005 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	0.033J	.029J		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26716 Analysis Method: EPA 8082
QC Batch Method: EPA 3550 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019

METHOD BLANK: 1806452 Matrix: Solid
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/03/14 16:59	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/03/14 16:59	
Decachlorobiphenyl (S)	%.	86	55-130	10/03/14 16:59	
Tetrachloro-m-xylene (S)	%.	82	50-128	10/03/14 16:59	

LABORATORY CONTROL SAMPLE: 1806453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	510	77	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	520	78	61-125	
Decachlorobiphenyl (S)	%.			79	55-130	
Tetrachloro-m-xylene (S)	%.			73	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1806454 1806455

Parameter	Units	10281597001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	1420	1420	1070	764	75	54	34-125	33	30	M0
PCB-1260 (Aroclor 1260)	ug/kg	ND	1420	1420	1020	786	72	55	30-128	26	30	
Decachlorobiphenyl (S)	%.						75	62	55-130			
Tetrachloro-m-xylene (S)	%.						70	60	50-128			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26731 Analysis Method: EPA 8082
QC Batch Method: EPA 3550 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597020, 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041

METHOD BLANK: 1807293 Matrix: Solid
Associated Lab Samples: 10281597020, 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/05/14 16:21	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/05/14 16:21	
Decachlorobiphenyl (S)	%.	85	55-130	10/05/14 16:21	
Tetrachloro-m-xylene (S)	%.	83	50-128	10/05/14 16:21	

LABORATORY CONTROL SAMPLE: 1807294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	473	71	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	476	71	61-125	
Decachlorobiphenyl (S)	%.			70	55-130	
Tetrachloro-m-xylene (S)	%.			70	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1807295 1807296

Parameter	Units	10281597020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	983	983	723	715	74	73	34-125	1	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	983	983	765	785	78	80	30-128	3	30	
Decachlorobiphenyl (S)	%.						78	78	55-130			
Tetrachloro-m-xylene (S)	%.						72	68	50-128			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26732 | Analysis Method: EPA 8082
QC Batch Method: EPA 3550 | Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597042, 10281597043, 10281597044, 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067

METHOD BLANK: 1807297 | Matrix: Solid
Associated Lab Samples: 10281597042, 10281597043, 10281597044, 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053, 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/05/14 01:09	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/05/14 01:09	
Decachlorobiphenyl (S)	%.	80	55-130	10/05/14 01:09	
Tetrachloro-m-xylene (S)	%.	77	50-128	10/05/14 01:09	

LABORATORY CONTROL SAMPLE: 1807298

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	544	82	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	555	83	61-125	
Decachlorobiphenyl (S)	%.			84	55-130	
Tetrachloro-m-xylene (S)	%.			81	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1807299 1807300

Parameter	Units	10281597042 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	1470	1480	1270	1120	87	76	34-125	12	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	1470	1480	1260	1110	86	75	30-128	13	30	
Decachlorobiphenyl (S)	%.						85	76	55-130			
Tetrachloro-m-xylene (S)	%.						83	73	50-128			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26733 | Analysis Method: EPA 8082
QC Batch Method: EPA 3550 | Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597068, 10281597069, 10281597070, 10281597071, 10281597073, 10281597074, 10281597075, 10281597076

METHOD BLANK: 1807306 | Matrix: Solid
Associated Lab Samples: 10281597068, 10281597069, 10281597070, 10281597071, 10281597073, 10281597074, 10281597075, 10281597076

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/05/14 09:23	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/05/14 09:23	
Decachlorobiphenyl (S)	%.	88	55-130	10/05/14 09:23	
Tetrachloro-m-xylene (S)	%.	88	50-128	10/05/14 09:23	

LABORATORY CONTROL SAMPLE: 1807307

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	541	81	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	554	83	61-125	
Decachlorobiphenyl (S)	%.			83	55-130	
Tetrachloro-m-xylene (S)	%.			80	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1807308 1807309

Parameter	Units	10281597068 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	1310	1320	993	1010	76	77	34-125	2	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	1310	1320	987	1050	75	79	30-128	6	30	
Decachlorobiphenyl (S)	%.						77	80	55-130			
Tetrachloro-m-xylene (S)	%.						78	73	50-128			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26748
QC Batch Method: EPA 3550
Analysis Method: EPA 8082
Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597072

METHOD BLANK: 1808735
Matrix: Solid
Associated Lab Samples: 10281597072

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/07/14 17:53	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/07/14 17:53	
Decachlorobiphenyl (S)	%.	96	55-130	10/07/14 17:53	
Tetrachloro-m-xylene (S)	%.	95	50-128	10/07/14 17:53	

LABORATORY CONTROL SAMPLE: 1808736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	642	96	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	642	96	61-125	
Decachlorobiphenyl (S)	%.			99	55-130	
Tetrachloro-m-xylene (S)	%.			98	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1809127 1809128

Parameter	Units	10283207001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	960	964	858	778	89	81	34-125	10	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	960	964	857	778	89	81	30-128	10	30	
Decachlorobiphenyl (S)	%.						93	82	55-130			
Tetrachloro-m-xylene (S)	%.						93	80	50-128			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26800 Analysis Method: EPA 8082
QC Batch Method: EPA 3550 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

METHOD BLANK: 1810832 Matrix: Solid
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	10/13/14 23:56	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	10/13/14 23:56	
Decachlorobiphenyl (S)	%.	86	55-130	10/13/14 23:56	
Tetrachloro-m-xylene (S)	%.	101	50-128	10/13/14 23:56	

LABORATORY CONTROL SAMPLE: 1810833

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	675	101	62-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	664	100	61-125	
Decachlorobiphenyl (S)	%.			87	55-130	
Tetrachloro-m-xylene (S)	%.			99	50-128	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1810836 1810837

Parameter	Units	10284611001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	664	667	737	713	111	107	34-125	3	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	664	667	611	596	92	89	30-128	3	30	
Decachlorobiphenyl (S)	%.						0	0	55-130			S4
Tetrachloro-m-xylene (S)	%.						0	0	50-128			D3,S4

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26574 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 | Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

METHOD BLANK: 1796647 | Matrix: Solid
Associated Lab Samples: 10281597001, 10281597002, 10281597003, 10281597004, 10281597005, 10281597006, 10281597007, 10281597008, 10281597009, 10281597010, 10281597011, 10281597012, 10281597013, 10281597014, 10281597015, 10281597016, 10281597017, 10281597018, 10281597019, 10281597020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/02/14 18:43	
2-Chloronaphthalene	ug/kg	ND	10.0	10/02/14 18:43	
2-Methylnaphthalene	ug/kg	ND	10.0	10/02/14 18:43	
Acenaphthene	ug/kg	ND	10.0	10/02/14 18:43	
Acenaphthylene	ug/kg	ND	10.0	10/02/14 18:43	
Anthracene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(a)anthracene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(a)pyrene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(e)pyrene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/02/14 18:43	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/02/14 18:43	
Chrysene	ug/kg	ND	10.0	10/02/14 18:43	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/02/14 18:43	
Dibenzofuran	ug/kg	ND	10.0	10/02/14 18:43	
Fluoranthene	ug/kg	ND	10.0	10/02/14 18:43	
Fluorene	ug/kg	ND	10.0	10/02/14 18:43	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/02/14 18:43	
Naphthalene	ug/kg	ND	10.0	10/02/14 18:43	
Phenanthrene	ug/kg	ND	10.0	10/02/14 18:43	
Pyrene	ug/kg	ND	10.0	10/02/14 18:43	
Total PAHs	ug/kg	0.0000000033		10/02/14 18:43	N2
2-Fluorobiphenyl (S)	%.	80	30-150	10/02/14 18:43	
Terphenyl-d14 (S)	%.	84	30-150	10/02/14 18:43	

LABORATORY CONTROL SAMPLE: 1796648

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	21.3	64	35-125	
2-Chloronaphthalene	ug/kg	33.3	21.5	65	70-130	L0
2-Methylnaphthalene	ug/kg	33.3	23.0	69	44-125	
Acenaphthene	ug/kg	33.3	22.3	67	46-125	
Acenaphthylene	ug/kg	33.3	23.8	71	45-125	
Anthracene	ug/kg	33.3	28.0	84	56-125	
Benzo(a)anthracene	ug/kg	33.3	29.8	89	64-125	
Benzo(a)pyrene	ug/kg	33.3	31.8	95	66-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1796648

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(b)fluoranthene	ug/kg	33.3	33.7	101	65-125	
Benzo(e)pyrene	ug/kg	33.3	28.4	85	62-125	
Benzo(g,h,i)perylene	ug/kg	33.3	31.8	95	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.1	84	60-125	
Chrysene	ug/kg	33.3	29.4	88	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.0	90	59-125	
Dibenzofuran	ug/kg	33.3	22.7	68	40-125	
Fluoranthene	ug/kg	33.3	29.2	87	70-125	
Fluorene	ug/kg	33.3	24.1	72	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	31.1	93	60-125	
Naphthalene	ug/kg	33.3	23.3	70	43-125	
Phenanthrene	ug/kg	33.3	26.5	80	60-125	
Pyrene	ug/kg	33.3	29.3	88	67-125	
Total PAHs	ug/kg		525			N2
2-Fluorobiphenyl (S)	%.			67	30-150	
Terphenyl-d14 (S)	%.			79	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1796649 1796650

Parameter	Units	10281597001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	71.1	70.8	53.4	54.8	67	69	30-150	3	30	
2-Chloronaphthalene	ug/kg	ND	71.1	70.8	50.8	51.2	71	72	30-128	1	30	
2-Methylnaphthalene	ug/kg	ND	71.1	70.8	60.2	63.0	72	76	30-150	5	30	
Acenaphthene	ug/kg	ND	71.1	70.8	55.3	59.3	75	80	30-150	7	30	
Acenaphthylene	ug/kg	ND	71.1	70.8	66.8	79.9	75	94	30-150	18	30	
Anthracene	ug/kg	24.8	71.1	70.8	78.5	94.0	75	98	30-150	18	30	
Benzo(a)anthracene	ug/kg	89.6	71.1	70.8	130	189	56	140	30-150	37	30	R1
Benzo(a)pyrene	ug/kg	105	71.1	70.8	145	218	55	159	30-150	40	30	M1,R1
Benzo(b)fluoranthene	ug/kg	136	71.1	70.8	167	257	43	171	30-150	43	30	M1,R1
Benzo(e)pyrene	ug/kg	60.4	71.1	70.8	103	146	60	121	56-125	34	30	R1
Benzo(g,h,i)perylene	ug/kg	65.2	71.1	70.8	112	161	66	135	30-150	35	30	R1
Benzo(k)fluoranthene	ug/kg	48.0	71.1	70.8	94.0	135	65	123	30-150	36	30	R1
Chrysene	ug/kg	97.3	71.1	70.8	133	205	50	151	30-150	43	30	M1,R1
Dibenz(a,h)anthracene	ug/kg	ND	71.1	70.8	72.3	84.7	77	95	30-150	16	30	
Dibenzofuran	ug/kg	ND	71.1	70.8	57.2	62.9	74	82	44-125	10	30	
Fluoranthene	ug/kg	132	71.1	70.8	157	241	36	155	30-150	42	30	M1,R1
Fluorene	ug/kg	ND	71.1	70.8	60.3	67.2	74	84	30-150	11	30	
Indeno(1,2,3-cd)pyrene	ug/kg	55.3	71.1	70.8	104	144	68	125	30-150	33	30	R1
Naphthalene	ug/kg	29.0	71.1	70.8	72.3	80.9	61	73	30-150	11	30	
Phenanthrene	ug/kg	34.9	71.1	70.8	79.4	103	63	96	30-150	26	30	
Pyrene	ug/kg	117	71.1	70.8	150	228	46	156	30-150	41	30	M1,R1
Total PAHs	ug/kg	995			1890	2610				32		N2
2-Fluorobiphenyl (S)	%.						72	72	30-150			
Terphenyl-d14 (S)	%.						79	81	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26645 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 | Analysis Description: 8270 Solid PAH by SIM MSSV

Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

METHOD BLANK: 1802118 | Matrix: Solid

Associated Lab Samples: 10281597022, 10281597023, 10281597024, 10281597025, 10281597026, 10281597027, 10281597028, 10281597029, 10281597030, 10281597031, 10281597032, 10281597034, 10281597035, 10281597036, 10281597037, 10281597038, 10281597039, 10281597040, 10281597041, 10281597042

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 07:14	
2-Chloronaphthalene	ug/kg	ND	10.0	10/03/14 07:14	
2-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 07:14	
Acenaphthene	ug/kg	ND	10.0	10/03/14 07:14	
Acenaphthylene	ug/kg	ND	10.0	10/03/14 07:14	
Anthracene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(a)anthracene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(a)pyrene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(e)pyrene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/03/14 07:14	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/03/14 07:14	
Chrysene	ug/kg	ND	10.0	10/03/14 07:14	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/03/14 07:14	
Dibenzofuran	ug/kg	ND	10.0	10/03/14 07:14	
Fluoranthene	ug/kg	ND	10.0	10/03/14 07:14	
Fluorene	ug/kg	ND	10.0	10/03/14 07:14	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/03/14 07:14	
Naphthalene	ug/kg	ND	10.0	10/03/14 07:14	
Phenanthrene	ug/kg	ND	10.0	10/03/14 07:14	
Pyrene	ug/kg	ND	10.0	10/03/14 07:14	
Total PAHs	ug/kg	0.0000000033		10/03/14 07:14	N2
2-Fluorobiphenyl (S)	%.	75	30-150	10/03/14 07:14	
Terphenyl-d14 (S)	%.	77	30-150	10/03/14 07:14	

LABORATORY CONTROL SAMPLE: 1802119

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	20.7	62	35-125	
2-Chloronaphthalene	ug/kg	33.3	20.1	60	70-130	L0
2-Methylnaphthalene	ug/kg	33.3	22.2	67	44-125	
Acenaphthene	ug/kg	33.3	21.4	64	46-125	
Acenaphthylene	ug/kg	33.3	22.2	66	45-125	
Anthracene	ug/kg	33.3	24.0	72	56-125	
Benzo(a)anthracene	ug/kg	33.3	26.3	79	64-125	
Benzo(a)pyrene	ug/kg	33.3	26.6	80	66-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1802119

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(b)fluoranthene	ug/kg	33.3	28.2	84	65-125	
Benzo(e)pyrene	ug/kg	33.3	23.4	70	62-125	
Benzo(g,h,i)perylene	ug/kg	33.3	28.1	84	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	26.9	81	60-125	
Chrysene	ug/kg	33.3	25.7	77	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	28.7	86	59-125	
Dibenzofuran	ug/kg	33.3	21.6	65	40-125	
Fluoranthene	ug/kg	33.3	26.5	80	70-125	
Fluorene	ug/kg	33.3	22.5	67	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	28.1	84	60-125	
Naphthalene	ug/kg	33.3	21.9	66	43-125	
Phenanthrene	ug/kg	33.3	22.5	68	60-125	
Pyrene	ug/kg	33.3	24.5	73	67-125	
Total PAHs	ug/kg		469			N2
2-Fluorobiphenyl (S)	%.			62	30-150	
Terphenyl-d14 (S)	%.			67	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1802120 1802121

Parameter	Units	10281597039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	41.8	41.7	27.8	29.2	59	62	30-150	5	30	
2-Chloronaphthalene	ug/kg	ND	41.8	41.7	25.6	27.2	61	65	30-128	6	30	
2-Methylnaphthalene	ug/kg	ND	41.8	41.7	31.2	32.5	64	67	30-150	4	30	
Acenaphthene	ug/kg	ND	41.8	41.7	30.5	32.7	63	68	30-150	7	30	
Acenaphthylene	ug/kg	ND	41.8	41.7	34.7	34.6	71	71	30-150	0	30	
Anthracene	ug/kg	16.4	41.8	41.7	40.1	42.0	57	61	30-150	4	30	
Benzo(a)anthracene	ug/kg	53.8	41.8	41.7	64.8	64.1	26	24	30-150	1	30	M1
Benzo(a)pyrene	ug/kg	55.9	41.8	41.7	72.3	66.8	39	26	30-150	8	30	M1
Benzo(b)fluoranthene	ug/kg	91.7	41.8	41.7	97.4	89.5	14	-5	30-150	9	30	M1
Benzo(e)pyrene	ug/kg	42.5	41.8	41.7	59.9	57.5	42	36	56-125	4	30	M1
Benzo(g,h,i)perylene	ug/kg	43.7	41.8	41.7	61.0	62.3	41	45	30-150	2	30	
Benzo(k)fluoranthene	ug/kg	29.3	41.8	41.7	53.0	50.4	57	50	30-150	5	30	
Chrysene	ug/kg	70.2	41.8	41.7	81.0	75.5	26	13	30-150	7	30	M1
Dibenz(a,h)anthracene	ug/kg	ND	41.8	41.7	36.8	39.3	88	94	30-150	6	30	
Dibenzofuran	ug/kg	ND	41.8	41.7	30.2	32.9	63	70	44-125	9	30	
Fluoranthene	ug/kg	113	41.8	41.7	98.1	105	-35	-20	30-150	7	30	M1
Fluorene	ug/kg	ND	41.8	41.7	32.9	35.8	64	71	30-150	8	30	
Indeno(1,2,3-cd)pyrene	ug/kg	35.9	41.8	41.7	53.7	55.0	43	46	30-150	2	30	
Naphthalene	ug/kg	ND	41.8	41.7	31.1	32.1	74	77	30-150	3	30	
Phenanthrene	ug/kg	41.8	41.8	41.7	52.8	55.8	26	34	30-150	5	30	M1
Pyrene	ug/kg	94.7	41.8	41.7	90.9	93.7	-9	-3	30-150	3	30	M1
Total PAHs	ug/kg	689			1050	1050				0		N2
2-Fluorobiphenyl (S)	%.						61	66	30-150			
Terphenyl-d14 (S)	%.						62	72	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26651 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 | Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10281597043, 10281597044, 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053

METHOD BLANK: 1802636 | Matrix: Solid
Associated Lab Samples: 10281597043, 10281597044, 10281597045, 10281597046, 10281597047, 10281597048, 10281597049, 10281597050, 10281597051, 10281597052, 10281597053

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/08/14 19:36	
2-Chloronaphthalene	ug/kg	ND	10.0	10/08/14 19:36	
2-Methylnaphthalene	ug/kg	ND	10.0	10/08/14 19:36	
Acenaphthene	ug/kg	ND	10.0	10/08/14 19:36	
Acenaphthylene	ug/kg	ND	10.0	10/08/14 19:36	
Anthracene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(a)anthracene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(a)pyrene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(e)pyrene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/08/14 19:36	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/08/14 19:36	
Chrysene	ug/kg	ND	10.0	10/08/14 19:36	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/08/14 19:36	
Dibenzofuran	ug/kg	ND	10.0	10/08/14 19:36	
Fluoranthene	ug/kg	ND	10.0	10/08/14 19:36	
Fluorene	ug/kg	ND	10.0	10/08/14 19:36	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/08/14 19:36	
Naphthalene	ug/kg	ND	10.0	10/08/14 19:36	
Phenanthrene	ug/kg	ND	10.0	10/08/14 19:36	
Pyrene	ug/kg	ND	10.0	10/08/14 19:36	
Total PAHs	ug/kg	0.0000000033		10/08/14 19:36	N2
2-Fluorobiphenyl (S)	%.	78	30-150	10/08/14 19:36	
Terphenyl-d14 (S)	%.	88	30-150	10/08/14 19:36	

LABORATORY CONTROL SAMPLE: 1802637

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	25.9	78	35-125	
2-Chloronaphthalene	ug/kg	33.3	25.3	76	70-130	
2-Methylnaphthalene	ug/kg	33.3	28.6	86	44-125	
Acenaphthene	ug/kg	33.3	27.0	81	46-125	
Acenaphthylene	ug/kg	33.3	28.4	85	45-125	
Anthracene	ug/kg	33.3	29.6	89	56-125	
Benzo(a)anthracene	ug/kg	33.3	30.6	92	64-125	
Benzo(a)pyrene	ug/kg	33.3	32.4	97	66-125	
Benzo(b)fluoranthene	ug/kg	33.3	34.3	103	65-125	
Benzo(e)pyrene	ug/kg	33.3	30.8	92	62-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1802637

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(g,h,i)perylene	ug/kg	33.3	34.1	102	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	31.1	93	60-125	
Chrysene	ug/kg	33.3	31.0	93	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	34.8	104	59-125	
Dibenzofuran	ug/kg	33.3	27.4	82	40-125	
Fluoranthene	ug/kg	33.3	31.9	96	70-125	
Fluorene	ug/kg	33.3	28.5	86	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	33.8	101	60-125	
Naphthalene	ug/kg	33.3	27.6	83	43-125	
Phenanthrene	ug/kg	33.3	28.1	84	60-125	
Pyrene	ug/kg	33.3	29.9	90	67-125	
Total PAHs	ug/kg		576			N2
2-Fluorobiphenyl (S)	%.			77	30-150	
Terphenyl-d14 (S)	%.			86	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1802638 1802639

Parameter	Units	10281597043 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	67.9	68.1	48.3	57.9	66	80	30-150	18	30	
2-Chloronaphthalene	ug/kg	ND	67.9	68.1	46.8	52.4	69	77	30-128	11	30	
2-Methylnaphthalene	ug/kg	ND	67.9	68.1	54.4	66.7	72	90	30-150	20	30	
Acenaphthene	ug/kg	ND	67.9	68.1	56.7	63.3	78	87	30-150	11	30	
Acenaphthylene	ug/kg	ND	67.9	68.1	71.1	86.3	81	103	30-150	19	30	
Anthracene	ug/kg	29.1	67.9	68.1	90.4	122	90	137	30-150	30	30	
Benzo(a)anthracene	ug/kg	74.8	67.9	68.1	140	189	96	167	30-150	30	30	M1
Benzo(a)pyrene	ug/kg	85.4	67.9	68.1	152	205	97	175	30-150	30	30	M1
Benzo(b)fluoranthene	ug/kg	124	67.9	68.1	193	268	101	210	30-150	32	30	M1,R1
Benzo(e)pyrene	ug/kg	57.8	67.9	68.1	119	159	89	149	56-125	29	30	M1
Benzo(g,h,i)perylene	ug/kg	56.0	67.9	68.1	124	161	100	154	30-150	26	30	M1
Benzo(k)fluoranthene	ug/kg	43.2	67.9	68.1	104	152	90	159	30-150	37	30	M1,R1
Chrysene	ug/kg	87.8	67.9	68.1	161	238	108	220	30-150	38	30	M1,R1
Dibenz(a,h)anthracene	ug/kg	ND	67.9	68.1	77.7	88.1	114	129	30-150	12	30	
Dibenzofuran	ug/kg	ND	67.9	68.1	59.1	66.9	81	92	44-125	12	30	
Fluoranthene	ug/kg	129	67.9	68.1	196	278	99	220	30-150	35	30	M1,R1
Fluorene	ug/kg	ND	67.9	68.1	64.7	74.8	84	98	30-150	14	30	
Indeno(1,2,3-cd)pyrene	ug/kg	49.0	67.9	68.1	113	145	94	140	30-150	25	30	
Naphthalene	ug/kg	ND	67.9	68.1	61.2	83.7	90	123	30-150	31	30	R1
Phenanthrene	ug/kg	35.4	67.9	68.1	95.4	122	88	127	30-150	24	30	
Pyrene	ug/kg	107	67.9	68.1	177	250	104	210	30-150	34	30	M1,R1
Total PAHs	ug/kg	878			2100	2800				29		N2
2-Fluorobiphenyl (S)	%.						72	77	30-150			
Terphenyl-d14 (S)	%.						85	86	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26710 Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070, 10281597071, 10281597072, 10281597073, 10281597074, 10281597075

METHOD BLANK: 1805805 Matrix: Solid
Associated Lab Samples: 10281597054, 10281597055, 10281597057, 10281597058, 10281597060, 10281597061, 10281597066, 10281597067, 10281597068, 10281597069, 10281597070, 10281597071, 10281597072, 10281597073, 10281597074, 10281597075

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 17:29	
2-Chloronaphthalene	ug/kg	ND	10.0	10/03/14 17:29	
2-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 17:29	
Acenaphthene	ug/kg	ND	10.0	10/03/14 17:29	
Acenaphthylene	ug/kg	ND	10.0	10/03/14 17:29	
Anthracene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(a)anthracene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(a)pyrene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(e)pyrene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/03/14 17:29	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/03/14 17:29	
Chrysene	ug/kg	ND	10.0	10/03/14 17:29	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/03/14 17:29	
Dibenzofuran	ug/kg	ND	10.0	10/03/14 17:29	
Fluoranthene	ug/kg	ND	10.0	10/03/14 17:29	
Fluorene	ug/kg	ND	10.0	10/03/14 17:29	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/03/14 17:29	
Naphthalene	ug/kg	ND	10.0	10/03/14 17:29	
Phenanthrene	ug/kg	ND	10.0	10/03/14 17:29	
Pyrene	ug/kg	ND	10.0	10/03/14 17:29	
Total PAHs	ug/kg	0.0000000033		10/03/14 17:29	N2
2-Fluorobiphenyl (S)	%.	67	30-150	10/03/14 17:29	
Terphenyl-d14 (S)	%.	77	30-150	10/03/14 17:29	

LABORATORY CONTROL SAMPLE: 1805806

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	21.9	66	35-125	
2-Chloronaphthalene	ug/kg	33.3	21.4	64	70-130	L0
2-Methylnaphthalene	ug/kg	33.3	23.9	72	44-125	
Acenaphthene	ug/kg	33.3	22.6	68	46-125	
Acenaphthylene	ug/kg	33.3	24.1	72	45-125	
Anthracene	ug/kg	33.3	26.9	81	56-125	
Benzo(a)anthracene	ug/kg	33.3	28.0	84	64-125	
Benzo(a)pyrene	ug/kg	33.3	29.6	89	66-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1805806

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(b)fluoranthene	ug/kg	33.3	29.8	89	65-125	
Benzo(e)pyrene	ug/kg	33.3	27.2	82	62-125	
Benzo(g,h,i)perylene	ug/kg	33.3	30.0	90	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.0	84	60-125	
Chrysene	ug/kg	33.3	27.9	84	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.4	91	59-125	
Dibenzofuran	ug/kg	33.3	23.5	71	40-125	
Fluoranthene	ug/kg	33.3	28.8	86	70-125	
Fluorene	ug/kg	33.3	24.7	74	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	29.7	89	60-125	
Naphthalene	ug/kg	33.3	23.4	70	43-125	
Phenanthrene	ug/kg	33.3	25.0	75	60-125	
Pyrene	ug/kg	33.3	27.3	82	67-125	
Total PAHs	ug/kg		508			N2
2-Fluorobiphenyl (S)	%.			65	30-150	
Terphenyl-d14 (S)	%.			78	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1805807 1805808

Parameter	Units	10281064001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	40.9	40.9	30.0	29.1	73	71	30-150	3	30	
2-Chloronaphthalene	ug/kg	ND	40.9	40.9	30.0	29.1	73	71	30-128	3	30	
2-Methylnaphthalene	ug/kg	ND	40.9	40.9	32.6	30.7	80	75	30-150	6	30	
Acenaphthene	ug/kg	ND	40.9	40.9	31.7	31.5	77	77	30-150	0	30	
Acenaphthylene	ug/kg	ND	40.9	40.9	33.8	35.1	83	86	30-150	4	30	
Anthracene	ug/kg	ND	40.9	40.9	38.5	39.7	94	97	30-150	3	30	
Benzo(a)anthracene	ug/kg	ND	40.9	40.9	33.3	32.9	81	81	30-150	1	30	
Benzo(a)pyrene	ug/kg	ND	40.9	40.9	35.7	34.7	87	85	30-150	3	30	
Benzo(b)fluoranthene	ug/kg	ND	40.9	40.9	36.5	36.5	89	89	30-150	0	30	
Benzo(e)pyrene	ug/kg	ND	40.9	40.9	33.1	33.6	81	82	56-125	1	30	
Benzo(g,h,i)perylene	ug/kg	ND	40.9	40.9	38.6	38.4	94	94	30-150	0	30	
Benzo(k)fluoranthene	ug/kg	ND	40.9	40.9	31.7	32.0	78	78	30-150	1	30	
Chrysene	ug/kg	ND	40.9	40.9	35.0	35.6	85	87	30-150	2	30	
Dibenz(a,h)anthracene	ug/kg	ND	40.9	40.9	35.0	34.6	86	85	30-150	1	30	
Dibenzofuran	ug/kg	ND	40.9	40.9	32.9	33.5	80	82	44-125	2	30	
Fluoranthene	ug/kg	ND	40.9	40.9	36.5	37.1	79	80	30-150	2	30	
Fluorene	ug/kg	ND	40.9	40.9	33.7	34.4	82	84	30-150	2	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	40.9	40.9	34.7	34.3	85	84	30-150	1	30	
Naphthalene	ug/kg	ND	40.9	40.9	28.8	26.4	70	65	30-150	9	30	
Phenanthrene	ug/kg	ND	40.9	40.9	33.6	34.9	82	85	30-150	4	30	
Pyrene	ug/kg	15.5	40.9	40.9	48.2	57.1	80	102	30-150	17	30	
Total PAHs	ug/kg	15.5			661	671				2		N2
2-Fluorobiphenyl (S)	%.						72	70	30-150			
Terphenyl-d14 (S)	%.						73	72	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26717
QC Batch Method: EPA 3550
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10281597076

METHOD BLANK: 1806474
Matrix: Solid
Associated Lab Samples: 10281597076

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 12:59	
2-Chloronaphthalene	ug/kg	ND	10.0	10/03/14 12:59	
2-Methylnaphthalene	ug/kg	ND	10.0	10/03/14 12:59	
Acenaphthene	ug/kg	ND	10.0	10/03/14 12:59	
Acenaphthylene	ug/kg	ND	10.0	10/03/14 12:59	
Anthracene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(a)anthracene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(a)pyrene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(e)pyrene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/03/14 12:59	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/03/14 12:59	
Chrysene	ug/kg	ND	10.0	10/03/14 12:59	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/03/14 12:59	
Dibenzofuran	ug/kg	ND	10.0	10/03/14 12:59	
Fluoranthene	ug/kg	ND	10.0	10/03/14 12:59	
Fluorene	ug/kg	ND	10.0	10/03/14 12:59	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/03/14 12:59	
Naphthalene	ug/kg	ND	10.0	10/03/14 12:59	
Phenanthrene	ug/kg	ND	10.0	10/03/14 12:59	
Pyrene	ug/kg	ND	10.0	10/03/14 12:59	
Total PAHs	ug/kg	0.0000000033		10/03/14 12:59	N2
2-Fluorobiphenyl (S)	%.	85	30-150	10/03/14 12:59	
Terphenyl-d14 (S)	%.	86	30-150	10/03/14 12:59	

LABORATORY CONTROL SAMPLE: 1806475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	21.9	66	35-125	
2-Chloronaphthalene	ug/kg	33.3	21.7	65	70-130	L0
2-Methylnaphthalene	ug/kg	33.3	24.2	73	44-125	
Acenaphthene	ug/kg	33.3	24.7	74	46-125	
Acenaphthylene	ug/kg	33.3	25.5	76	45-125	
Anthracene	ug/kg	33.3	27.3	82	56-125	
Benzo(a)anthracene	ug/kg	33.3	29.6	89	64-125	
Benzo(a)pyrene	ug/kg	33.3	31.6	95	66-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.9	96	65-125	
Benzo(e)pyrene	ug/kg	33.3	31.0	93	62-125	
Benzo(g,h,i)perylene	ug/kg	33.3	35.6	107	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.8	92	60-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1806475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chrysene	ug/kg	33.3	31.8	96	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	36.1	108	59-125	
Dibenzofuran	ug/kg	33.3	24.9	75	40-125	
Fluoranthene	ug/kg	33.3	29.8	89	70-125	
Fluorene	ug/kg	33.3	26.9	81	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	34.4	103	60-125	
Naphthalene	ug/kg	33.3	23.7	71	43-125	
Phenanthrene	ug/kg	33.3	27.9	84	60-125	
Pyrene	ug/kg	33.3	31.0	93	67-125	
Total PAHs	ug/kg		556			N2
2-Fluorobiphenyl (S)	%.			74	30-150	
Terphenyl-d14 (S)	%.			84	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1806476 1806477

Parameter	Units	10281597076 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	84	84	77.1	82.8	67	74	30-150	7	30	
2-Chloronaphthalene	ug/kg	ND	84	84	49.7	53.8	59	64	30-128	8	30	
2-Methylnaphthalene	ug/kg	28.1	84	84	90.9	98.2	75	83	30-150	8	30	
Acenaphthene	ug/kg	ND	84	84	80.8	87.3	72	79	30-150	8	30	
Acenaphthylene	ug/kg	45.7	84	84	108	116	74	84	30-150	7	30	
Anthracene	ug/kg	109	84	84	182	187	88	93	30-150	3	30	
Benzo(a)anthracene	ug/kg	246	84	84	338	375	109	153	30-150	10	30	M1
Benzo(a)pyrene	ug/kg	287	84	84	397	426	131	165	30-150	7	30	M1
Benzo(b)fluoranthene	ug/kg	358	84	84	492	507	160	177	30-150	3	30	M1
Benzo(e)pyrene	ug/kg	211	84	84	318	322	127	131	56-125	1	30	M1
Benzo(g,h,i)perylene	ug/kg	201	84	84	295	312	111	132	30-150	6	30	
Benzo(k)fluoranthene	ug/kg	195	84	84	297	323	122	153	30-150	9	30	M1
Chrysene	ug/kg	354	84	84	500	517	174	195	30-150	3	30	M1
Dibenz(a,h)anthracene	ug/kg	58.6	84	84	132	148	87	106	30-150	11	30	
Dibenzofuran	ug/kg	ND	84	84	81.1	88.5	73	82	44-125	9	30	
Fluoranthene	ug/kg	440	84	84	552	579	133	165	30-150	5	30	M1
Fluorene	ug/kg	35.0	84	84	98.6	106	76	85	30-150	7	30	
Indeno(1,2,3-cd)pyrene	ug/kg	167	84	84	254	271	104	124	30-150	6	30	
Naphthalene	ug/kg	58.2	84	84	116	123	69	77	30-150	5	30	
Phenanthrene	ug/kg	204	84	84	292	293	105	106	30-150	0	30	
Pyrene	ug/kg	442	84	84	582	626	166	219	30-150	7	30	M1
Total PAHs	ug/kg	3410			5170	5460				6		N2
2-Fluorobiphenyl (S)	%.						69	75	30-150			
Terphenyl-d14 (S)	%.						81	91	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26821 | Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 | Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

METHOD BLANK: 1812388 | Matrix: Solid
Associated Lab Samples: 10281597077, 10281597078, 10281597079, 10281597080, 10281597081, 10281597082, 10281597083

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	10/14/14 08:39	
2-Chloronaphthalene	ug/kg	ND	10.0	10/14/14 08:39	
2-Methylnaphthalene	ug/kg	ND	10.0	10/14/14 08:39	
Acenaphthene	ug/kg	ND	10.0	10/14/14 08:39	
Acenaphthylene	ug/kg	ND	10.0	10/14/14 08:39	
Anthracene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(a)anthracene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(a)pyrene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(b)fluoranthene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(e)pyrene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	10/14/14 08:39	
Benzo(k)fluoranthene	ug/kg	ND	10.0	10/14/14 08:39	
Chrysene	ug/kg	ND	10.0	10/14/14 08:39	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	10/14/14 08:39	
Dibenzofuran	ug/kg	ND	10.0	10/14/14 08:39	
Fluoranthene	ug/kg	ND	10.0	10/14/14 08:39	
Fluorene	ug/kg	ND	10.0	10/14/14 08:39	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	10/14/14 08:39	
Naphthalene	ug/kg	ND	10.0	10/14/14 08:39	
Phenanthrene	ug/kg	ND	10.0	10/14/14 08:39	
Pyrene	ug/kg	ND	10.0	10/14/14 08:39	
Total PAHs	ug/kg	0.0000000033		10/14/14 08:39	N2
2-Fluorobiphenyl (S)	%.	64	30-150	10/14/14 08:39	
Terphenyl-d14 (S)	%.	76	30-150	10/14/14 08:39	

LABORATORY CONTROL SAMPLE: 1812389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	24.9	75	35-125	
2-Chloronaphthalene	ug/kg	33.3	22.8	68	70-130	L0
2-Methylnaphthalene	ug/kg	33.3	26.9	81	44-125	
Acenaphthene	ug/kg	33.3	25.7	77	46-125	
Acenaphthylene	ug/kg	33.3	26.3	79	45-125	
Anthracene	ug/kg	33.3	27.2	82	56-125	
Benzo(a)anthracene	ug/kg	33.3	28.6	86	64-125	
Benzo(a)pyrene	ug/kg	33.3	31.6	95	66-125	
Benzo(b)fluoranthene	ug/kg	33.3	33.1	99	65-125	
Benzo(e)pyrene	ug/kg	33.3	29.4	88	62-125	
Benzo(g,h,i)perylene	ug/kg	33.3	30.8	93	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.4	91	60-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

LABORATORY CONTROL SAMPLE: 1812389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chrysene	ug/kg	33.3	28.9	87	60-125	
Dibenz(a,h)anthracene	ug/kg	33.3	31.3	94	59-125	
Dibenzofuran	ug/kg	33.3	25.5	76	40-125	
Fluoranthene	ug/kg	33.3	30.9	93	70-125	
Fluorene	ug/kg	33.3	27.3	82	55-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	30.7	92	60-125	
Naphthalene	ug/kg	33.3	24.9	75	43-125	
Phenanthrene	ug/kg	33.3	25.1	75	60-125	
Pyrene	ug/kg	33.3	27.6	83	67-125	
Total PAHs	ug/kg		538			N2
2-Fluorobiphenyl (S)	%.			73	30-150	
Terphenyl-d14 (S)	%.			81	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1812390 1812391

Parameter	Units	10283625002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	34.1	34.3	24.7	25.2	68	69	30-150	2	30	
2-Chloronaphthalene	ug/kg	ND	34.1	34.3	20.1	20.8	59	61	30-128	4	30	
2-Methylnaphthalene	ug/kg	ND	34.1	34.3	28.5	28.4	73	73	30-150	0	30	
Acenaphthene	ug/kg	ND	34.1	34.3	22.5	23.4	66	68	30-150	4	30	
Acenaphthylene	ug/kg	ND	34.1	34.3	23.4	24.3	68	71	30-150	4	30	
Anthracene	ug/kg	ND	34.1	34.3	22.7	23.4	66	68	30-150	3	30	
Benzo(a)anthracene	ug/kg	ND	34.1	34.3	21.9	23.4	64	68	30-150	7	30	
Benzo(a)pyrene	ug/kg	ND	34.1	34.3	25.4	24.8	74	72	30-150	3	30	
Benzo(b)fluoranthene	ug/kg	ND	34.1	34.3	23.2	25.2	68	73	30-150	8	30	
Benzo(e)pyrene	ug/kg	ND	34.1	34.3	21.7	22.7	64	66	56-125	4	30	
Benzo(g,h,i)perylene	ug/kg	ND	34.1	34.3	31.6	30.1	93	88	30-150	5	30	
Benzo(k)fluoranthene	ug/kg	ND	34.1	34.3	21.0	21.9	62	64	30-150	4	30	
Chrysene	ug/kg	ND	34.1	34.3	22.6	24.3	66	71	30-150	7	30	
Dibenz(a,h)anthracene	ug/kg	ND	34.1	34.3	24.0	26.2	70	76	30-150	9	30	
Dibenzofuran	ug/kg	ND	34.1	34.3	22.3	23.2	64	67	44-125	4	30	
Fluoranthene	ug/kg	ND	34.1	34.3	17.7	19.8	52	58	30-150	11	30	
Fluorene	ug/kg	ND	34.1	34.3	22.9	24.2	65	69	30-150	6	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	34.1	34.3	24.5	25.3	72	74	30-150	3	30	
Naphthalene	ug/kg	ND	34.1	34.3	22.4	23.0	66	67	30-150	3	30	
Phenanthrene	ug/kg	ND	34.1	34.3	21.2	22.0	59	61	30-150	4	30	
Pyrene	ug/kg	ND	34.1	34.3	22.3	25.6	65	74	30-150	14	30	
Total PAHs	ug/kg	0.0000000034			433	454				5		N2
2-Fluorobiphenyl (S)	%.						62	63	30-150			
Terphenyl-d14 (S)	%.						64	73	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26535
QC Batch Method: EPA 3510
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 10281597021

METHOD BLANK: 1794030
Matrix: Water
Associated Lab Samples: 10281597021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.040	09/30/14 20:00	
Acenaphthylene	ug/L	ND	0.040	09/30/14 20:00	
Anthracene	ug/L	ND	0.040	09/30/14 20:00	
Benzo(a)anthracene	ug/L	ND	0.040	09/30/14 20:00	
Benzo(a)pyrene	ug/L	ND	0.040	09/30/14 20:00	
Benzo(b)fluoranthene	ug/L	ND	0.040	09/30/14 20:00	
Benzo(g,h,i)perylene	ug/L	ND	0.040	09/30/14 20:00	
Benzo(k)fluoranthene	ug/L	ND	0.040	09/30/14 20:00	
Chrysene	ug/L	ND	0.040	09/30/14 20:00	
Dibenz(a,h)anthracene	ug/L	ND	0.040	09/30/14 20:00	
Fluoranthene	ug/L	ND	0.040	09/30/14 20:00	
Fluorene	ug/L	ND	0.040	09/30/14 20:00	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.040	09/30/14 20:00	
Naphthalene	ug/L	ND	0.040	09/30/14 20:00	
Phenanthrene	ug/L	ND	0.040	09/30/14 20:00	
Pyrene	ug/L	ND	0.040	09/30/14 20:00	
2-Fluorobiphenyl (S)	%.	63	54-125	09/30/14 20:00	
Terphenyl-d14 (S)	%.	92	68-125	09/30/14 20:00	

LABORATORY CONTROL SAMPLE & LCSD: 1794031 1794037

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Acenaphthene	ug/L	1	0.69	0.77	69	77	46-125	11	20	
Acenaphthylene	ug/L	1	0.71	0.79	71	79	45-125	11	20	
Anthracene	ug/L	1	0.77	0.85	77	85	54-125	9	20	
Benzo(a)anthracene	ug/L	1	0.83	0.92	83	92	59-125	10	20	
Benzo(a)pyrene	ug/L	1	0.89	0.97	89	97	58-125	9	20	
Benzo(b)fluoranthene	ug/L	1	0.92	0.97	92	97	61-125	5	20	
Benzo(g,h,i)perylene	ug/L	1	0.96	1.0	96	105	55-125	9	20	
Benzo(k)fluoranthene	ug/L	1	0.95	0.99	95	99	63-125	4	20	
Chrysene	ug/L	1	0.92	1.0	92	101	59-125	9	20	
Dibenz(a,h)anthracene	ug/L	1	0.92	1.0	92	102	59-125	10	20	
Fluoranthene	ug/L	1	0.88	0.96	88	96	63-125	8	20	
Fluorene	ug/L	1	0.75	0.84	75	84	52-125	11	20	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.92	1.0	92	102	59-125	10	20	
Naphthalene	ug/L	1	0.66	0.74	66	74	44-125	12	20	
Phenanthrene	ug/L	1	0.81	0.87	81	87	55-125	7	20	
Pyrene	ug/L	1	0.88	0.96	88	96	66-125	8	20	
2-Fluorobiphenyl (S)	%.				66	73	54-125			
Terphenyl-d14 (S)	%.				87	93	68-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26588
QC Batch Method: EPA 3510
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 10281597033

METHOD BLANK: 1797363
Matrix: Water
Associated Lab Samples: 10281597033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.040	10/01/14 05:41	
Acenaphthylene	ug/L	ND	0.040	10/01/14 05:41	
Anthracene	ug/L	ND	0.040	10/01/14 05:41	
Benzo(a)anthracene	ug/L	ND	0.040	10/01/14 05:41	
Benzo(a)pyrene	ug/L	ND	0.040	10/01/14 05:41	
Benzo(b)fluoranthene	ug/L	ND	0.040	10/01/14 05:41	
Benzo(g,h,i)perylene	ug/L	ND	0.040	10/01/14 05:41	
Benzo(k)fluoranthene	ug/L	ND	0.040	10/01/14 05:41	
Chrysene	ug/L	ND	0.040	10/01/14 05:41	
Dibenz(a,h)anthracene	ug/L	ND	0.040	10/01/14 05:41	
Fluoranthene	ug/L	ND	0.040	10/01/14 05:41	
Fluorene	ug/L	ND	0.040	10/01/14 05:41	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.040	10/01/14 05:41	
Naphthalene	ug/L	ND	0.040	10/01/14 05:41	
Phenanthrene	ug/L	ND	0.040	10/01/14 05:41	
Pyrene	ug/L	ND	0.040	10/01/14 05:41	
2-Fluorobiphenyl (S)	%.	70	54-125	10/01/14 05:41	
Terphenyl-d14 (S)	%.	73	68-125	10/01/14 05:41	

LABORATORY CONTROL SAMPLE & LCSD: 1797364 1797365

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Acenaphthene	ug/L	1	0.76	0.69	76	69	46-125	10	20	
Acenaphthylene	ug/L	1	0.78	0.70	78	70	45-125	11	20	
Anthracene	ug/L	1	0.86	0.86	86	86	54-125	0	20	
Benzo(a)anthracene	ug/L	1	0.85	0.90	85	90	59-125	6	20	
Benzo(a)pyrene	ug/L	1	0.89	0.97	89	97	58-125	8	20	
Benzo(b)fluoranthene	ug/L	1	0.93	0.99	93	99	61-125	7	20	
Benzo(g,h,i)perylene	ug/L	1	0.91	0.95	91	95	55-125	4	20	
Benzo(k)fluoranthene	ug/L	1	0.89	0.93	89	93	63-125	4	20	
Chrysene	ug/L	1	0.87	0.92	87	92	59-125	6	20	
Dibenz(a,h)anthracene	ug/L	1	0.92	0.96	92	96	59-125	5	20	
Fluoranthene	ug/L	1	0.87	0.90	87	90	63-125	3	20	
Fluorene	ug/L	1	0.77	0.70	77	70	52-125	9	20	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.90	0.94	90	94	59-125	5	20	
Naphthalene	ug/L	1	0.77	0.71	77	71	44-125	7	20	
Phenanthrene	ug/L	1	0.82	0.81	82	81	55-125	1	20	
Pyrene	ug/L	1	0.87	0.90	87	90	66-125	3	20	
2-Fluorobiphenyl (S)	%.				72	63	54-125			
Terphenyl-d14 (S)	%.				81	83	68-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26614
QC Batch Method: EPA 3510
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 10281597065

METHOD BLANK: 1799135
Matrix: Water
Associated Lab Samples: 10281597065

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.040	09/30/14 21:17	
Acenaphthylene	ug/L	ND	0.040	09/30/14 21:17	
Anthracene	ug/L	ND	0.040	09/30/14 21:17	
Benzo(a)anthracene	ug/L	ND	0.040	09/30/14 21:17	
Benzo(a)pyrene	ug/L	ND	0.040	09/30/14 21:17	
Benzo(b)fluoranthene	ug/L	ND	0.040	09/30/14 21:17	
Benzo(g,h,i)perylene	ug/L	ND	0.040	09/30/14 21:17	
Benzo(k)fluoranthene	ug/L	ND	0.040	09/30/14 21:17	
Chrysene	ug/L	ND	0.040	09/30/14 21:17	
Dibenz(a,h)anthracene	ug/L	ND	0.040	09/30/14 21:17	
Fluoranthene	ug/L	ND	0.040	09/30/14 21:17	
Fluorene	ug/L	ND	0.040	09/30/14 21:17	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.040	09/30/14 21:17	
Naphthalene	ug/L	ND	0.040	09/30/14 21:17	
Phenanthrene	ug/L	ND	0.040	09/30/14 21:17	
Pyrene	ug/L	ND	0.040	09/30/14 21:17	
2-Fluorobiphenyl (S)	%.	79	54-125	09/30/14 21:17	
Terphenyl-d14 (S)	%.	90	68-125	09/30/14 21:17	

LABORATORY CONTROL SAMPLE & LCSD: 1799136 1799137

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Acenaphthene	ug/L	1	0.78	0.71	78	71	46-125	9	20	
Acenaphthylene	ug/L	1	0.80	0.73	80	73	45-125	10	20	
Anthracene	ug/L	1	0.84	0.76	84	76	54-125	10	20	
Benzo(a)anthracene	ug/L	1	0.81	0.75	81	75	59-125	7	20	
Benzo(a)pyrene	ug/L	1	0.88	0.83	88	83	58-125	6	20	
Benzo(b)fluoranthene	ug/L	1	0.91	0.84	91	84	61-125	7	20	
Benzo(g,h,i)perylene	ug/L	1	0.85	0.80	85	80	55-125	6	20	
Benzo(k)fluoranthene	ug/L	1	0.88	0.82	88	82	63-125	7	20	
Chrysene	ug/L	1	0.83	0.78	83	78	59-125	7	20	
Dibenz(a,h)anthracene	ug/L	1	0.85	0.81	85	81	59-125	5	20	
Fluoranthene	ug/L	1	0.84	0.77	84	77	63-125	9	20	
Fluorene	ug/L	1	0.79	0.71	79	71	52-125	10	20	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.84	0.80	84	80	59-125	5	20	
Naphthalene	ug/L	1	0.79	0.73	79	73	44-125	9	20	
Phenanthrene	ug/L	1	0.81	0.75	81	75	55-125	8	20	
Pyrene	ug/L	1	0.82	0.77	82	77	66-125	7	20	
2-Fluorobiphenyl (S)	%.				69	66	54-125			
Terphenyl-d14 (S)	%.				78	73	68-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: OEXT/26811
QC Batch Method: EPA 3510
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 10281597084

METHOD BLANK: 1811799
Matrix: Water
Associated Lab Samples: 10281597084

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.040	10/12/14 11:44	
Acenaphthylene	ug/L	ND	0.040	10/12/14 11:44	
Anthracene	ug/L	ND	0.040	10/12/14 11:44	
Benzo(a)anthracene	ug/L	ND	0.040	10/12/14 11:44	
Benzo(a)pyrene	ug/L	ND	0.040	10/12/14 11:44	
Benzo(b)fluoranthene	ug/L	ND	0.040	10/12/14 11:44	
Benzo(g,h,i)perylene	ug/L	ND	0.040	10/12/14 11:44	
Benzo(k)fluoranthene	ug/L	ND	0.040	10/12/14 11:44	
Chrysene	ug/L	ND	0.040	10/12/14 11:44	
Dibenz(a,h)anthracene	ug/L	ND	0.040	10/12/14 11:44	
Fluoranthene	ug/L	ND	0.040	10/12/14 11:44	
Fluorene	ug/L	ND	0.040	10/12/14 11:44	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.040	10/12/14 11:44	
Naphthalene	ug/L	ND	0.040	10/12/14 11:44	
Phenanthrene	ug/L	ND	0.040	10/12/14 11:44	
Pyrene	ug/L	ND	0.040	10/12/14 11:44	
2-Fluorobiphenyl (S)	%.	62	54-125	10/12/14 11:44	
Terphenyl-d14 (S)	%.	88	68-125	10/12/14 11:44	

LABORATORY CONTROL SAMPLE & LCSD: 1811800 1811801

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Acenaphthene	ug/L	1	0.75	0.11	75	11	46-125	148	20	L0,R1
Acenaphthylene	ug/L	1	0.78	0.11	78	11	45-125	153	20	L0,R1
Anthracene	ug/L	1	0.79	0.69	79	69	54-125	13	20	
Benzo(a)anthracene	ug/L	1	0.89	0.85	89	85	59-125	4	20	
Benzo(a)pyrene	ug/L	1	0.93	0.90	93	90	58-125	4	20	
Benzo(b)fluoranthene	ug/L	1	0.98	0.89	98	89	61-125	9	20	
Benzo(g,h,i)perylene	ug/L	1	0.95	0.91	95	91	55-125	4	20	
Benzo(k)fluoranthene	ug/L	1	0.87	0.87	87	87	63-125	1	20	
Chrysene	ug/L	1	0.87	0.84	87	84	59-125	4	20	
Dibenz(a,h)anthracene	ug/L	1	0.97	0.93	97	93	59-125	4	20	
Fluoranthene	ug/L	1	0.93	0.87	93	87	63-125	6	20	
Fluorene	ug/L	1	0.81	0.40	81	40	52-125	68	20	L0,R1
Indeno(1,2,3-cd)pyrene	ug/L	1	0.94	0.91	94	91	59-125	4	20	
Naphthalene	ug/L	1	0.79	.012J	79	1	44-125		20	L0
Phenanthrene	ug/L	1	0.76	0.64	76	64	55-125	18	20	
Pyrene	ug/L	1	0.88	0.81	88	81	66-125	9	20	
2-Fluorobiphenyl (S)	%.				71	5	54-125			S0
Terphenyl-d14 (S)	%.				86	80	68-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

QC Batch: WETA/20573 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
Associated Lab Samples: 10281597056, 10281597059, 10281597062, 10281597063, 10281597064

METHOD BLANK: 1808779 Matrix: Water
Associated Lab Samples: 10281597056, 10281597059, 10281597062, 10281597063, 10281597064

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.040	10/06/14 18:24	

LABORATORY CONTROL SAMPLE: 1808780

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	1	0.92	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808781 1808782

Parameter	Units	10282832006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.067	1	1	0.86	0.86	79	80	90-110	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808783 1808784

Parameter	Units	10281597064 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.18	1	1	0.96	0.97	78	79	90-110	1	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-MT	Pace Analytical Services - Montana

ANALYTE QUALIFIERS

1M	Sample re-extracted out of hold with original results being reported. Results do not confirm.
2M	Sample was re-extracted out of hold to confirm data, data was confirmed.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H2	Extraction or preparation was conducted outside of the recognized method holding time.
H3	Sample was received or analysis requested beyond the recognized method holding time.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold TNI accreditation for this parameter.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597001	**SS 1022-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597002	**SS 1022-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597003	**SS 1022-CH (100cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597004	**SS 1023-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597005	**SS 1023-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597006	**SS 1024-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597007	**SS 1024-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597008	**SS 1024-CH (100cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597009	**SS 1025-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597010	**SS 1025-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597011	**SS 1025-CH (100cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597012	**DUP-01-CH**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597013	**SS 1032-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597014	**SS 1032-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597015	**SS 1032-CH (100cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597016	**SS 1030-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597017	**SS 1030-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597018	**SS 1021-CH (15cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597019	**SS 1021-CH (50cm)**	EPA 3550	OEXT/26716	EPA 8082	GCSV/14179
10281597020	**SS 1021-CH (100cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597022	**SS 1026-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597023	**SS 1026-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597024	**SS 1026-CH (100cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597025	**SS 1028-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597026	**SS 1028-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597027	**SS 1028-CH (100cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597028	**SS 1028-CH (200cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597029	**SS 1027-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597030	**SS 1027-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597031	**SS 1027-CH (100cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597032	**SS 1027-CH (200cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597034	**SS 1029-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597035	**SS 1029-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597036	**SS 1029-CH (100cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597037	**SS 1029-CH (200cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597038	**SS 1042-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597039	**SS 1042-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597040	**SS 1010-CH (15cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597041	**SS 1010-CH (50cm)**	EPA 3550	OEXT/26731	EPA 8082	GCSV/14182
10281597042	**SS 1010-CH (100cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597043	**SS 1001-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597044	**SS 1001-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597045	**SS1033-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597046	**SS1033-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597047	**SS1033-CH (100cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597048	**SS1034-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597049	**SS1034-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597050	**SS1034-CH (100cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597051	**SS1031-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597052	**SS1031-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597053	**SS1031-CH (100cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597054	**SS1041-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597055	**SS1041-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597057	**SS1004-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597058	**SS1004-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597060	**SS1012-CH (15cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597061	**SS1012-CH (50cm)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597066	**SS1017-CH (15CM)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597067	**SS1017-CH (50CM)**	EPA 3550	OEXT/26732	EPA 8082	GCSV/14183
10281597068	**SS1011-CH (15CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597069	**SS1011-CH (50CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597070	**SS1011-CH (100CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597071	**SS1009-CH (15CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597072	**SS1009-CH (50CM)**	EPA 3550	OEXT/26748	EPA 8082	GCSV/14213
10281597073	**SS1005-CH (15CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597074	**SS1005-CH (50CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597075	**SS1002-CH (15CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597076	**SS1002-CH (50CM)**	EPA 3550	OEXT/26733	EPA 8082	GCSV/14184
10281597077	**SS1037-CH (15cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597078	**SS1037-CH (50cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597079	**SS1037-CH (100cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597080	**SS1035-CH (15cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597081	**SS1035-CH (50cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597082	**SS1035-CH (100cm)**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597083	**DUP-03-CH**	EPA 3550	OEXT/26800	EPA 8082	GCSV/14253
10281597001	**SS 1022-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597002	**SS 1022-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597003	**SS 1022-CH (100cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597004	**SS 1023-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597005	**SS 1023-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597006	**SS 1024-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597007	**SS 1024-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597008	**SS 1024-CH (100cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597009	**SS 1025-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597010	**SS 1025-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597011	**SS 1025-CH (100cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597012	**DUP-01-CH**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597013	**SS 1032-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597014	**SS 1032-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597015	**SS 1032-CH (100cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597016	**SS 1030-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597017	**SS 1030-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597018	**SS 1021-CH (15cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597019	**SS 1021-CH (50cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597020	**SS 1021-CH (100cm)**	EPA 3050	MPRP/49157	EPA 6010C	ICP/21056
10281597022	**SS 1026-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597023	**SS 1026-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597024	**SS 1026-CH (100cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597025	**SS 1028-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597026	**SS 1028-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597027	**SS 1028-CH (100cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597028	**SS 1028-CH (200cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597029	**SS 1027-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597030	**SS 1027-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597031	**SS 1027-CH (100cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597032	**SS 1027-CH (200cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597034	**SS 1029-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597035	**SS 1029-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597036	**SS 1029-CH (100cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597037	**SS 1029-CH (200cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597038	**SS 1042-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597039	**SS 1042-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597040	**SS 1010-CH (15cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597041	**SS 1010-CH (50cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597042	**SS 1010-CH (100cm)**	EPA 3050	MPRP/49180	EPA 6010C	ICP/21091
10281597043	**SS 1001-CH (15cm)**	EPA 3050	MPRP/49182	EPA 6010C	ICP/21054
10281597044	**SS 1001-CH (50cm)**	EPA 3050	MPRP/49182	EPA 6010C	ICP/21054
10281597045	**SS1033-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597046	**SS1033-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597047	**SS1033-CH (100cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597048	**SS1034-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597049	**SS1034-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597050	**SS1034-CH (100cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597051	**SS1031-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597052	**SS1031-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597053	**SS1031-CH (100cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597054	**SS1041-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597055	**SS1041-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597057	**SS1004-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597058	**SS1004-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597060	**SS1012-CH (15cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597061	**SS1012-CH (50cm)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597066	**SS1017-CH (15CM)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597067	**SS1017-CH (50CM)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597068	**SS1011-CH (15CM)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597069	**SS1011-CH (50CM)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597070	**SS1011-CH (100CM)**	EPA 3050	MPRP/49364	EPA 6010C	ICP/21120
10281597071	**SS1009-CH (15CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119
10281597072	**SS1009-CH (50CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119
10281597073	**SS1005-CH (15CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119
10281597074	**SS1005-CH (50CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597075	**SS1002-CH (15CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119
10281597076	**SS1002-CH (50CM)**	EPA 3050	MPRP/49439	EPA 6010C	ICP/21119
10281597077	**SS1037-CH (15cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597078	**SS1037-CH (50cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597079	**SS1037-CH (100cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597080	**SS1035-CH (15cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597081	**SS1035-CH (50cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597082	**SS1035-CH (100cm)**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597083	**DUP-03-CH**	EPA 3050	MPRP/49570	EPA 6010C	ICP/21189
10281597001	**SS 1022-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597002	**SS 1022-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597003	**SS 1022-CH (100cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597004	**SS 1023-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597005	**SS 1023-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597006	**SS 1024-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597007	**SS 1024-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597008	**SS 1024-CH (100cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597009	**SS 1025-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597010	**SS 1025-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597011	**SS 1025-CH (100cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597012	**DUP-01-CH**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597013	**SS 1032-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597014	**SS 1032-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597015	**SS 1032-CH (100cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597016	**SS 1030-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597017	**SS 1030-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597018	**SS 1021-CH (15cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597019	**SS 1021-CH (50cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597020	**SS 1021-CH (100cm)**	EPA 7471B	MERP/11678	EPA 7471B	MERC/13547
10281597022	**SS 1026-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597023	**SS 1026-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597024	**SS 1026-CH (100cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597025	**SS 1028-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597026	**SS 1028-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597027	**SS 1028-CH (100cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597028	**SS 1028-CH (200cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597029	**SS 1027-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597030	**SS 1027-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597031	**SS 1027-CH (100cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597032	**SS 1027-CH (200cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597034	**SS 1029-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597035	**SS 1029-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597036	**SS 1029-CH (100cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597037	**SS 1029-CH (200cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597038	**SS 1042-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597039	**SS 1042-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597040	**SS 1010-CH (15cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597041	**SS 1010-CH (50cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597042	**SS 1010-CH (100cm)**	EPA 7471B	MERP/11679	EPA 7471B	MERC/13572
10281597043	**SS 1001-CH (15cm)**	EPA 7471B	MERP/11680	EPA 7471B	MERC/13477
10281597044	**SS 1001-CH (50cm)**	EPA 7471B	MERP/11680	EPA 7471B	MERC/13477
10281597045	**SS1033-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597046	**SS1033-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597047	**SS1033-CH (100cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597048	**SS1034-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597049	**SS1034-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597050	**SS1034-CH (100cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597051	**SS1031-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597052	**SS1031-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597053	**SS1031-CH (100cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597054	**SS1041-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597055	**SS1041-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597057	**SS1004-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597058	**SS1004-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597060	**SS1012-CH (15cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597061	**SS1012-CH (50cm)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597066	**SS1017-CH (15CM)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597067	**SS1017-CH (50CM)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597068	**SS1011-CH (15CM)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597069	**SS1011-CH (50CM)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597070	**SS1011-CH (100CM)**	EPA 7471B	MERP/11766	EPA 7471B	MERC/13597
10281597071	**SS1009-CH (15CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597072	**SS1009-CH (50CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597073	**SS1005-CH (15CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597074	**SS1005-CH (50CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597075	**SS1002-CH (15CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597076	**SS1002-CH (50CM)**	EPA 7471B	MERP/11796	EPA 7471B	MERC/13598
10281597077	**SS1037-CH (15cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597078	**SS1037-CH (50cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597079	**SS1037-CH (100cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597080	**SS1035-CH (15cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597081	**SS1035-CH (50cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597082	**SS1035-CH (100cm)**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597083	**DUP-03-CH**	EPA 7471B	MERP/11862	EPA 7471B	MERC/13721
10281597001	**SS 1022-CH (15cm)**	ASTM D2974	MPRP/49311		
10281597002	**SS 1022-CH (50cm)**	ASTM D2974	MPRP/49311		
10281597003	**SS 1022-CH (100cm)**	ASTM D2974	MPRP/49311		
10281597004	**SS 1023-CH (15cm)**	ASTM D2974	MPRP/49311		
10281597005	**SS 1023-CH (50cm)**	ASTM D2974	MPRP/49311		
10281597006	**SS 1024-CH (15cm)**	ASTM D2974	MPRP/49312		
10281597007	**SS 1024-CH (50cm)**	ASTM D2974	MPRP/49312		
10281597008	**SS 1024-CH (100cm)**	ASTM D2974	MPRP/49312		
10281597009	**SS 1025-CH (15cm)**	ASTM D2974	MPRP/49312		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597010	**SS 1025-CH (50cm)**	ASTM D2974	MPRP/49312		
10281597011	**SS 1025-CH (100cm)**	ASTM D2974	MPRP/49312		
10281597012	**DUP-01-CH**	ASTM D2974	MPRP/49312		
10281597013	**SS 1032-CH (15cm)**	ASTM D2974	MPRP/49312		
10281597014	**SS 1032-CH (50cm)**	ASTM D2974	MPRP/49312		
10281597015	**SS 1032-CH (100cm)**	ASTM D2974	MPRP/49312		
10281597016	**SS 1030-CH (15cm)**	ASTM D2974	MPRP/49312		
10281597017	**SS 1030-CH (50cm)**	ASTM D2974	MPRP/49312		
10281597018	**SS 1021-CH (15cm)**	ASTM D2974	MPRP/49312		
10281597019	**SS 1021-CH (50cm)**	ASTM D2974	MPRP/49312		
10281597020	**SS 1021-CH (100cm)**	ASTM D2974	MPRP/49312		
10281597022	**SS 1026-CH (15cm)**	ASTM D2974	MPRP/49377		
10281597023	**SS 1026-CH (50cm)**	ASTM D2974	MPRP/49377		
10281597024	**SS 1026-CH (100cm)**	ASTM D2974	MPRP/49377		
10281597025	**SS 1028-CH (15cm)**	ASTM D2974	MPRP/49377		
10281597026	**SS 1028-CH (50cm)**	ASTM D2974	MPRP/49377		
10281597027	**SS 1028-CH (100cm)**	ASTM D2974	MPRP/49377		
10281597028	**SS 1028-CH (200cm)**	ASTM D2974	MPRP/49377		
10281597029	**SS 1027-CH (15cm)**	ASTM D2974	MPRP/49377		
10281597030	**SS 1027-CH (50cm)**	ASTM D2974	MPRP/49377		
10281597031	**SS 1027-CH (100cm)**	ASTM D2974	MPRP/49377		
10281597032	**SS 1027-CH (200cm)**	ASTM D2974	MPRP/49378		
10281597034	**SS 1029-CH (15cm)**	ASTM D2974	MPRP/49378		
10281597035	**SS 1029-CH (50cm)**	ASTM D2974	MPRP/49378		
10281597036	**SS 1029-CH (100cm)**	ASTM D2974	MPRP/49378		
10281597037	**SS 1029-CH (200cm)**	ASTM D2974	MPRP/49378		
10281597038	**SS 1042-CH (15cm)**	ASTM D2974	MPRP/49378		
10281597039	**SS 1042-CH (50cm)**	ASTM D2974	MPRP/49378		
10281597040	**SS 1010-CH (15cm)**	ASTM D2974	MPRP/49378		
10281597041	**SS 1010-CH (50cm)**	ASTM D2974	MPRP/49378		
10281597042	**SS 1010-CH (100cm)**	ASTM D2974	MPRP/49378		
10281597043	**SS 1001-CH (15cm)**	ASTM D2974	MPRP/49378		
10281597044	**SS 1001-CH (50cm)**	ASTM D2974	MPRP/49378		
10281597045	**SS1033-CH (15cm)**	ASTM D2974	MPRP/49414		
10281597046	**SS1033-CH (50cm)**	ASTM D2974	MPRP/49414		
10281597047	**SS1033-CH (100cm)**	ASTM D2974	MPRP/49414		
10281597048	**SS1034-CH (15cm)**	ASTM D2974	MPRP/49414		
10281597049	**SS1034-CH (50cm)**	ASTM D2974	MPRP/49414		
10281597050	**SS1034-CH (100cm)**	ASTM D2974	MPRP/49414		
10281597051	**SS1031-CH (15cm)**	ASTM D2974	MPRP/49414		
10281597052	**SS1031-CH (50cm)**	ASTM D2974	MPRP/49414		
10281597053	**SS1031-CH (100cm)**	ASTM D2974	MPRP/49414		
10281597054	**SS1041-CH (15cm)**	ASTM D2974	MPRP/49469		
10281597055	**SS1041-CH (50cm)**	ASTM D2974	MPRP/49469		
10281597057	**SS1004-CH (15cm)**	ASTM D2974	MPRP/49469		
10281597058	**SS1004-CH (50cm)**	ASTM D2974	MPRP/49469		
10281597060	**SS1012-CH (15cm)**	ASTM D2974	MPRP/49469		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597061	**SS1012-CH (50cm)**	ASTM D2974	MPRP/49469		
10281597066	**SS1017-CH (15CM)**	ASTM D2974	MPRP/49473		
10281597067	**SS1017-CH (50CM)**	ASTM D2974	MPRP/49473		
10281597068	**SS1011-CH (15CM)**	ASTM D2974	MPRP/49473		
10281597069	**SS1011-CH (50CM)**	ASTM D2974	MPRP/49473		
10281597070	**SS1011-CH (100CM)**	ASTM D2974	MPRP/49473		
10281597071	**SS1009-CH (15CM)**	ASTM D2974	MPRP/49473		
10281597072	**SS1009-CH (50CM)**	ASTM D2974	MPRP/49473		
10281597073	**SS1005-CH (15CM)**	ASTM D2974	MPRP/49473		
10281597074	**SS1005-CH (50CM)**	ASTM D2974	MPRP/49473		
10281597075	**SS1002-CH (15CM)**	ASTM D2974	MPRP/49473		
10281597076	**SS1002-CH (50CM)**	ASTM D2974	MPRP/49473		
10281597077	**SS1037-CH (15cm)**	ASTM D2974	MPRP/49654		
10281597078	**SS1037-CH (50cm)**	ASTM D2974	MPRP/49654		
10281597079	**SS1037-CH (100cm)**	ASTM D2974	MPRP/49654		
10281597080	**SS1035-CH (15cm)**	ASTM D2974	MPRP/49654		
10281597081	**SS1035-CH (50cm)**	ASTM D2974	MPRP/49657		
10281597082	**SS1035-CH (100cm)**	ASTM D2974	MPRP/49657		
10281597083	**DUP-03-CH**	ASTM D2974	MPRP/49657		
10281597001	**SS 1022-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597002	**SS 1022-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597003	**SS 1022-CH (100cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597004	**SS 1023-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597005	**SS 1023-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597006	**SS 1024-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597007	**SS 1024-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597008	**SS 1024-CH (100cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597009	**SS 1025-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597010	**SS 1025-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597011	**SS 1025-CH (100cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597012	**DUP-01-CH**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597013	**SS 1032-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597014	**SS 1032-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597015	**SS 1032-CH (100cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597016	**SS 1030-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597017	**SS 1030-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597018	**SS 1021-CH (15cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597019	**SS 1021-CH (50cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597020	**SS 1021-CH (100cm)**	EPA 3550	OEXT/26574	EPA 8270 by SIM	MSSV/11196
10281597022	**SS 1026-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597023	**SS 1026-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597024	**SS 1026-CH (100cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597025	**SS 1028-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597026	**SS 1028-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597027	**SS 1028-CH (100cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597028	**SS 1028-CH (200cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597029	**SS 1027-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597030	**SS 1027-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597031	**SS 1027-CH (100cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597032	**SS 1027-CH (200cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597034	**SS 1029-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597035	**SS 1029-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597036	**SS 1029-CH (100cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597037	**SS 1029-CH (200cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597038	**SS 1042-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597039	**SS 1042-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597040	**SS 1010-CH (15cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597041	**SS 1010-CH (50cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597042	**SS 1010-CH (100cm)**	EPA 3550	OEXT/26645	EPA 8270 by SIM	MSSV/11198
10281597043	**SS 1001-CH (15cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597044	**SS 1001-CH (50cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597045	**SS1033-CH (15cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597046	**SS1033-CH (50cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597047	**SS1033-CH (100cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597048	**SS1034-CH (15cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597049	**SS1034-CH (50cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597050	**SS1034-CH (100cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597051	**SS1031-CH (15cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597052	**SS1031-CH (50cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597053	**SS1031-CH (100cm)**	EPA 3550	OEXT/26651	EPA 8270 by SIM	MSSV/11240
10281597054	**SS1041-CH (15cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597055	**SS1041-CH (50cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597057	**SS1004-CH (15cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597058	**SS1004-CH (50cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597060	**SS1012-CH (15cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597061	**SS1012-CH (50cm)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597066	**SS1017-CH (15CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597067	**SS1017-CH (50CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597068	**SS1011-CH (15CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597069	**SS1011-CH (50CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597070	**SS1011-CH (100CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597071	**SS1009-CH (15CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597072	**SS1009-CH (50CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597073	**SS1005-CH (15CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597074	**SS1005-CH (50CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597075	**SS1002-CH (15CM)**	EPA 3550	OEXT/26710	EPA 8270 by SIM	MSSV/11212
10281597076	**SS1002-CH (50CM)**	EPA 3550	OEXT/26717	EPA 8270 by SIM	MSSV/11208
10281597077	**SS1037-CH (15cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597078	**SS1037-CH (50cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597079	**SS1037-CH (100cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597080	**SS1035-CH (15cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597081	**SS1035-CH (50cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597082	**SS1035-CH (100cm)**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 193702726.200 40th Ave Project
Pace Project No.: 10281597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10281597083	**DUP-03-CH**	EPA 3550	OEXT/26821	EPA 8270 by SIM	MSSV/11266
10281597021	**EB-01-CH**	EPA 3510	OEXT/26535	EPA 8270 by SIM	MSSV/11183
10281597033	**EB-02-CH**	EPA 3510	OEXT/26588	EPA 8270 by SIM	MSSV/11180
10281597065	**EB-03-CH**	EPA 3510	OEXT/26614	EPA 8270 by SIM	MSSV/11179
10281597084	**EB-04-CH**	EPA 3510	OEXT/26811	EPA 8270 by SIM	MSSV/11254
10281597056	**NSW1041-CH**	SM 4500-S2-D	MT/16949		
10281597059	**NSW1004-CH**	SM 4500-S2-D	MT/16949		
10281597062	**NSW1012-CH**	SM 4500-S2-D	MT/16949		
10281597063	**NSW1016-CH**	SM 4500-S2-D	MT/16949		
10281597064	**DUP-02-CH**	SM 4500-S2-D	MT/16949		
10281597056	**NSW1041-CH**	EPA 350.1	WETA/20573		
10281597059	**NSW1004-CH**	EPA 350.1	WETA/20573		
10281597062	**NSW1012-CH**	EPA 350.1	WETA/20573		
10281597063	**NSW1016-CH**	EPA 350.1	WETA/20573		
10281597064	**DUP-02-CH**	EPA 350.1	WETA/20573		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

WO# 10281597

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1022-CH (15cm)			9-16-14	0830				5	5								X	X	X	X			X		10281597-001
2	SS 1022-CH (50cm)				0840				5	5								X	X	X	X			X		002
3	SS 1022-CH (100cm)				0850				5	5								X	X	X	X			X		003
4	SS 1023-CH (15cm)				0930				5	5								X	X	X	X			X		004
5	SS 1023-CH (50cm)				0940				5	5								X	X	X	X			X		005
6	SS 1024-CH (15cm)				1015				5	5								X	X	X	X			X		006
7	SS 1024-CH (50cm)				1025				5	5								X	X	X	X			X		007
8	SS 1024-CH (100cm)				1035				5	5								X	X	X	X			X		008
9	SS 1025-CH (15cm)				1120				5	5								X	X	X	X			X		009
10	SS 1025-CH (50cm)				1130				5	5								X	X	X	X			X		010
11	SS 1025-CH (100cm)				1140				5	5								X	X	X	X			X		011
12	DUP-01-CH				—				5	5								X	X	X	X			X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-16-14	1255		9/16/14	1255		Y		
** All 17 isomers using high resolution 8290		9/16/14	1535		9/16/14	1535				
		9/16/14	1822		9/16/14	1822	30	Y	N	X
							18			
							23	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Temp in

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/16/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1032-CH (15cm)	SL	C	9-15-14	1545				5	5								X	X	X	X			X		013
2	SS 1032-CH (50cm)	SL	C	9-15-14	1610				5	5								X	X	X	X			X		014
3	SS 1032-CH (100cm)	SL	C	9-15-14	1615				5	5								X	X	X	X			X		015
4	SS 1030-CH (15cm)	SL	C	9-15-14	1700				5	5								X	X	X	X			X		016
5	SS 1030-CH (50cm)	SL	C	9-15-14	1710				5	5								X	X	X	X			X		017
6	SS 1021-CH (15cm)	SL	C	9-15-14	1745				5	5								X	X	X	X			X		018
7	SS 1021-CH (50cm)	SL	C	9-15-14	1755				5	5								X	X	X	X			X		019
8	SS 1021-CH (100cm)	SL	C	9-15-14	1800				5	5								X	X	X	X			X		020
9	EB-01-CH	WT		9-15-14	1830				2	2									X							021
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-16-14	1255		9/16/14	1255	Y
** All 17 isomers using high resolution 8290		9/16/14	1532		9/16/14	1535	
		9/16/14	1882		9/16	1852	3.5 / 10 / 0.3 / Y / N / Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Matthew Pontier
SIGNATURE of SAMPLER:	Matthew Pontier
DATE Signed (MM/DD/YY):	09/16/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281597

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.7, 0.7 **Cooler Temp Corrected (°C):** 3.0, 1.0, 0.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.3 **Date and Initials of Person Examining Contents:** 9/16/14 BD

0.0

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? SC	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix:_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed:_____ Lot # of added preservative:_____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):_____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Karla Xiong **Date:** Sept. 17, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281597

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1026-CH (15cm)	SL		9-16-14	1420				5	5								X	X	X	X			X						10281597-022
2	SS 1026-CH (50cm)	SL		9-16-14	1430				5	5								X	X	X	X			X						-023
3	SS 1026-CH (100cm)	SL		9-16-14	1440				5	5								X	X	X	X			X						-024
4	SS 1028-CH (15cm)	SL		9-16-14	1510				5	5								X	X	X	X			X						025
5	SS 1028-CH (50cm)	SL		9-16-14	1515				5	5								X	X	X	X			X						026
6	SS 1028-CH (100cm)	SL		9-16-14	1520				5	5								X	X	X	X			X						027
7	SS 1028-CH (200cm)	SL		9-16-14	1525				5	5								X	X	X	X			X						028
8	SS 1027-CH (15cm)	SL		9-16-14	1620				5	5								X	X	X	X			X						029
9	SS 1027-CH (50cm)	SL		9-16-14	1625				5	5								X	X	X	X			X						030
10	SS 1027-CH (100cm)	SL		9-16-14	1630				5	5								X	X	X	X			X						031
11	SS 1027-CH (200cm)	SL		9-16-14	1635				5	5								X	X	X	X			X						032
12	EB-02-CH	WT		9-16-14	1700				2	2									X											033

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245		Y		
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550				
WORK ORDER # 10281597		9/17/14	1827		9/17/14	1827	Ambient	Y	N	Y
DIOXIN WORKORDER# 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/16/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1029 - CH (15cm)	SL	C	9-17-14	0820				5	5								X	X	X	X			X							034
2	SS 1029 - CH (50cm)	SL	C	9-17-14	0825				5	5								X	X	X	X			X							035
3	SS 1029 - CH (100cm)	SL	C	9-17-14	0830				5	5								X	X	X	X			X							036
4	SS 1029 - CH (200 cm)	SL	C	9-17-14	0835				5	5								X	X	X	X			X							037 ~~035~~
5	SS 1042 - CH (15cm)	SL	C	9-17-14	0925				5	5								X	X	X	X			X							038 ~~039~~
6	SS 1042 - CH (50cm)	SL	C	9-17-14	0930				5	5								X	X	X	X			X							039 ~~040~~
7	SS 1042 - CH (50cm) - MS	SL	C	9-17-14	0930				5	5								X	X	X	X			X							039 ~~040~~ ~~046~~
8	SS 1042 - CH (50cm) - MSD	SL	C	9-17-14	0930				5	5								X	X	X	X			X							039 ~~040~~
9	SS 1010 - CH (15cm)	SL	C	9-17-14					5	5								X	X	X	X			X							040 ~~044~~
10	SS 1010 - CH (50cm)	SL	C	9-17-14					5	5								X	X	X	X			X							041 ~~042~~
11	SS 1010 - CH (100 cm)	SL	C	9-17-14					5	5								X	X	X	X			X							042 ~~043~~
12																															~~043~~ 044

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245		Y		
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550				
WORK ORDER # 10281597		9/17/14	1827		9/17/14	1827		Y	Y	Y
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/17/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 3 of 3

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester, MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	COLLECTED Composite Start Time	COLLECTED Composite End/Grab Date	COLLECTED Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	MOISTURE	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1001-CH (150cm)	SL	C	9-17-14	1150				5	5								X	X	X	X		*	X		043
2	SS 1001-CH (50cm)	SL	C	9-17-14	1155				5	5								X	X	X	X			X		044
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-17-14	1245		9/17/14	1245		Y		
** All 17 isomers using high resolution 8290		9/17/14	1550		9/17/14	1550				
WORK ORDER # 10281597		9/17/14	1827	Pace	9/17/14	1827	X	N	Y	
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Matthew Pontier
SIGNATURE of SAMPLER:	Matthew Pontier
DATE Signed (MM/DD/YY):	09/17/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281597

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.5, 5.2 **Cooler Temp Corrected (°C):** 3.8, 5.5, 3.4, 3.2, 3.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.3 **Date and Initials of Person Examining Contents:** 9/17/14 RO

3.1, 2.9, 3.0

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed:_____ Lot # of added preservative:_____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):_____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Kalen Xiong **Date:** Sept. 18, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical™
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281597

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Stantec	Report To:	David Constant	Attention:	David Constant
Address:	6188 Rome Circle NW	Copy To:		Company Name:	Stantec
	Rochester, MN 55901			Address:	6188 Rome Circle NW Rochester MN 55901
Email To:	david.constant@stantec.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 507.529.6045	Fax: 507.282.3100	Project Name:	40th Avenue Project - Duluth	Pace Project Manager:	Kabor Xiong
Requested Due Date/TAT:	Standard	Project Number:	193702726.200	Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1033-CH (15 cm)	SL	C	9-18-14	0840				5	5								X	X	X	X			X		045
2	SS 1033-CH (50 cm)	SL	C	9-18-14	0845				5	5								X	X	X	X			X		046
3	SS 1033-CH (100 cm)	SL	C	9-18-14	0850				5	5								X	X	X	X			X		047
4	SS 1034-CH (15 cm)	SL	C	9-18-14	0925				5	5								X	X	X	X			X		048
5	SS 1034-CH (50 cm)	SL	C	9-18-14	0930				5	5								X	X	X	X			X		049
6	SS 1034-CH (100 cm)	SL	C	9-18-14	0935				5	5								X	X	X	X			X		050
7	SS 1031-CH (15 cm)	SL	C	9-18-14	1005				5	5								X	X	X	X			X		051
8	SS 1031-CH (50 cm)	SL	C	9-18-14	1010				5	5								X	X	X	X			X		052
9	SS 1031-CH (100 cm)	SL	C	9-18-14	1015				5	5								X	X	X	X			X		053
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals analyses for Arsenic, Cadmium, Chromium, Copper Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-18-14	1110		9/18/14	1110	Y
** All 17 isomers using high resolution 8290		9/18/14	1610		9/18/14	1610	Y
WORK ORDER # 10281597		9/18/14	1848		9-18	1848	Y N Y
WORK ORDER # 10281617							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/18/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: **WO# : 10281597**

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.0 **Cooler Temp Corrected (°C):** 0.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.3 **Date and Initials of Person Examining Contents:** KHF 9-18-14

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No	☐ N/A	12. 33-50 cm missing 1 JGFU
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Karla Kreing **Date:** Sept. 29, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

9/23/14
10281597

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Stantec	Report To:	David Constant	Attention:	David Constant
Address:	6188 Rome Circle NW	Copy To:		Company Name:	Stantec
	Rochester, MN 55901			Address:	6188 Rome Circle NW Rochester MN 55901
Email To:	david.constant@stantec.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 507.529.6045	Fax: 507.282.3100	Project Name:	40th Avenue Project - Duluth	Pace Project Manager:	Kabor Xiong
Requested Due Date/TAT:	Standard	Project Number:	193702726.200	Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS1041-CH (15cm)	SL	C	9-19-14	0825				5	5								X	X	X	X			X		10281597 054
2	SS1041-CH (50cm)	SL	C	9-19-14	0830				5	5								X	X	X	X			X		055
3	NSW1041-CH	WT	G	9-19-14	0925				2	1	1											X	X			SULFIDE IS UNPRESERVED 056
4	SS1004-CH (15cm)	SL	C	9-19-14	1045				5	5								X	X	X	X			X		057
5	SS1004-CH (50cm)	SL	C	9-19-14	1050				5	5								X	X	X	X			X		058
6	NSW1004-CH	WT	G	9-19-14	1115				2		1						1					X	X			059
7	SS1012-CH (15cm)	SL	C	9-19-14	1135				5	5								X	X	X	X			X		060
8	SS1012-CH (50cm)	SL	C	9-19-14	1140				5	5								X	X	X	X			X		061
9	NSW1012-CH	WT	G	9-19-14	1225				2		1						1					X	X			062
10	NSW1016-CH	WT	G	9-19-14	1250				2		1						1					X	X			063
11	DUP-02-CH	WT	G	9-19-14	—				2	1	1											X	X			SULFIDE IS UNPRESERVED 064
12	EB-03-CH	WT		9-19-14	1430				2	2									X							065

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / Stantec	9-19-14	1515		9/19/14	1515	1.3	Y	N	Y
** All 17 isomers using high resolution 8290		9/19/14	1600		9/19/14	1600	4.5	Y	N	Y
WORK ORDER # 10281597		9/19/14	1845		9/19/14	1845		Y		
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/19/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281597

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☒ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0, 4.2 **Cooler Temp Corrected (°C):** 1.3, 4.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.3 **Date and Initials of Person Examining Contents:** 9-19-14 M.

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL & WT	☒ Yes	☐ No	☐ N/A	12. Missing metals container for all soil samples
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☒ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 03, 06, 09, 10, 11 1/1
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Karla Xiong **Date:** Sept. 25, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281597

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	8188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	8188 Rome Circle NW Rochester, MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	MOISTURE					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS 1017-CH (15cm)			9-18-14	1345				5	5									X	X	X	X			X						066
2	SS 1017-CH (50cm)			9-18-14	1350				5	5									X	X	X	X			X						067
3	SS 1011-CH (15cm)			9-18-14	1425				5	5									X	X	X	X			X						068
4	SS 1011-CH (50cm)			9-18-14	1430				5	5									X	X	X	X			X						069
5	SS 1011-CH (100cm)			9-18-14	1435				5	5									X	X	X	X			X						070
6	SS 1009-CH (15cm)			9-18-14	1450				5	5									X	X	X	X			X						071
7	SS 1009-CH (50cm)			9-18-14	1455				5	5									X	X	X	X			X						072
8	SS 1005-CH (15cm)			9-18-14	1525				5	5									X	X	X	X			X						073
9	SS 1005-CH (50cm)			9-18-14	1530				5	5									X	X	X	X			X						074
10	SS 1002-CH (15cm)			9-18-14	1605				5	5									X	X	X	X			X						075
11	SS 1002-CH (50cm)			9-18-14	1610				5	5									X	X	X	X			X						076
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Points analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	9-19-14	1515	[signature]	9-19-14	16:50	1.3 / 4.5	Y	Y	Y
** All 17 isomers using high resolution 8290						18:45				
WORK ORDER # 10281597										
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matthew Pontier

SIGNATURE of SAMPLER: Matthew Pontier DATE Signed (MM/DD/YY): 09/19/2014

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO# : 10281597

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☒ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 18, 4.2 **Cooler Temp Corrected (°C):** 1.3, 4.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.3 **Date and Initials of Person Examining Contents:** EJ 9/19/14

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed:_____ Lot # of added preservative:_____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):_____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Kalin Xiong **Date:** Sept. 25 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10281597

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec
Address:	6188 Rome Circle NW
	Rochester, MN 55901
Email To:	david.constant@stantec.com
Phone: 507.529.6045	Fax: 507.282.3100
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	David Constant
Copy To:	
Purchase Order No.:	
Project Name:	40th Avenue Project - Duluth
Project Number:	193702726.200

Section C Invoice Information:

Attention:	David Constant
Company Name:	Stantec
Address:	6188 Rome Circle NW Rochester MN 55901
Pace Quote Reference:	
Pace Project Manager:	Kabor Xiong
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	PCB (EPA 8082)	PAH (8270SIM)	*Metals (EPA 6010B/7471)	**PCDD/F (EPA 8290)	Ammonia	Sulfide	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SS1037-CH (15cm)			10-1-14	0750				5	5									X	X	X	X			X		077
2	SS1037-CH (50cm)			10-1-14	0755				5	5									X	X	X	X			X		078
3	SS1037-CH (100cm)			10-1-14	0800				5	5									X	X	X	X			X		079
4	SS1035-CH (15cm)			10-1-14	0920				5	5									X	X	X	X			X		080
5	SS1035-CH (50cm)			10-1-14	0925				5	5									X	X	X	X			X		081
6	SS1035-CH (100cm)			10-1-14	0930				5	5									X	X	X	X			X		082
7	DUP-03-CH			10-1-14	—				5	5									X	X	X	X			X		083
8	EB-04-CH			10-1-14	1030				2	2										X							084
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc.	Matthew Pontier / STANTEC	10-1-14	1335	E M Pace	10/1/14	1335	1.6	Y	N	Y
** All 17 isomers using high resolution 8290							4.1			
WORK ORDER # 10281597										
DIOXIN WORK ORDER # 10281617										

SAMPLER NAME AND SIGNATURE		
PRINT Name of SAMPLER:	Matthew Pontier	
SIGNATURE of SAMPLER:	Matthew Pontier	DATE Signed (MM/DD/YY): 10/01/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: **F-MN-L-213-rev.09**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO#: 10281597

10281597

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.3, 3.8 **Cooler Temp Corrected (°C):** 1.6, 4.1 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.3 **Date and Initials of Person Examining Contents:** 10-1-14 AA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL + WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Karla Xiong **Date:** Oct. 2, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: MN to MT Sample Transfer Form	Revised Date: 14Jul2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS Fed Ex
Tracking #:	6446 1784 0250
Client:	Stantec
Due Date:	10//6/14
Pace WO:	10281597
Project Manager:	KX1

MN to MT Sample Transfer Condition Upon Receipt Form

ANALYSIS REQUESTED

Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
Tests					
Sulfide	~~BP2Z~~ BP2U ~~BP4U~~	5	056, 059, 062-064	Y	9/26 NK

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION

IR Gun: B88A0140728348, Correction Factor:	0	Sample Matrix:	H2O
Cooler Temp Read (°C): 0.5	Cooler Temp Corrected (°C): 0.5	Filtred volume rec'd for dissolved tests:	Yes __ No X NA __
Arrived on Ice:	Yes X No__	Samples pH have been checked:	Yes X No__ NA __
Custody Seal Present:	Yes X No__	Trip Blank Present:	Yes __ No__ NA X
Short Hold Time Requested < 72 Hours:	Yes __ No X	Trip Blank Custody Seals Present:	Yes __ No__ NA X
Rush TAT Requested:	Yes __ No X	Pace Trip Blank Lot #:	NA
Sufficient Sample Volume:	Yes X No__	Sample Composites Required:	Yes __ No X NA __
Samples Arrived within Hold Time:	Yes X No__	Report Samples:	Wet Wt. __ Dry Wt.__
Containers Intact:	Yes X No__	Reporting Units:	

CUSTODY TRANSFER

Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
Karen Stone Fed Ex	9/25	8:47	Nelson / Pace	9/26/14	1000

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date: _____

Comments/Resolution: _____

Project Manager Review: _____ Date: 9/26/14