
APPENDIX H

Surface Water Quality Monitoring Report

Clean Harbors Canada, Inc.

2016 Annual Landfill Report



2016 Annual Surface Water Quality Monitoring Report

Clean Harbors Lambton Facility

Clean Harbors Canada, Inc.



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1. Introduction

1.1 Purpose and Organization

GHD on behalf of Clean Harbors Canada, Inc. (Clean Harbors) has prepared the "2016 Annual Surface Water Quality Monitoring Report" for the Clean Harbors Lambton Facility (Lambton Facility or Site) located at 4090 Telfer Road, St. Clair Township, Ontario.

The Lambton Facility is a hazardous waste disposal facility owned and operated by Clean Harbors. The main hazardous waste disposal operations at the facility are the disposal of liquid waste in a liquid incinerator and the processing and disposal of solid waste in the landfill. The hazardous solid waste landfill component located at the Site operates in accordance with Environmental Compliance Approval No. A031806 (Waste ECA) issued by the Ministry of the Environment and Climate Change (MOECC). The most recent amendment is Notice 9 dated October 19, 2015. The surface water management system is approved by ECA No. 1065-9VVJSW (SW ECA) dated October 19, 2015. Both the Waste and SW ECAs have conditions that relate to surface water monitoring requirements. Copies of the Waste ECA and SW ECA are provided in Appendix A of the 2016 Clean Harbors Lambton Facility Annual Landfill Monitoring Report (Landfill Annual Monitoring Report).

Condition 9(a)(i) of the Waste ECA requires that by December 15, 2015 Clean Harbors submit an updated surface water monitoring program to the Regional Director for approval, while Condition 8 of the SW ECA requires that within 6 months of issuance that Clean Harbors prepare and submit to the Director for approval a proposal for the characterization of storm water from the facility. Clean Harbors responded to both of the above conditions with the submission of a letter prepared by GHD titled "Surface Water Monitoring Program and Surface Water Characterization Program, Lambton Facility, Corunna, Ontario" dated December 9, 2015. A copy of this letter is provided in Appendix I-1. The revised surface water program, that includes the characterization program, was approved by the MOECC Regional Director on March 29, 2016. The approved surface water monitoring and storm water characterization programs are summarized in Section 3.

This report is organized into the following sections:

- Section 1.0 Introduction
- Section 2.0 Physical Setting
- Section 3.0 Monitoring Program
- Section 4.0 Monitoring Results and Assessment
- Section 5.0 Conclusions and Recommendations

1.2 Site Location

The Lambton Facility is a hazardous waste management complex on 121 hectares (ha) of land located within Lots 8, 9, Concession 10 in St. Clair Township, Lambton County, operated by Clean Harbors. The facility location and site plan are presented on Figures 1 and 2. Geo-reference data for the Lambton Facility is presented in Table 1.



Table 1 Geo-Reference Data for the Lambton Facility

Location ⁽¹⁾	Northing	Easting
Northeast Corner of the Facility	4748849	394521
Southeast Corner of the Facility	4747490	394478
Northwest Corner of the Facility	4748882	393626
Southwest Corner of the Facility	4747582	393570

The Lambton Facility includes an analytical laboratory, transportation depot, high temperature incinerator, solid waste pre-treatment processes, and a secure landfill (waste disposal site). The solid waste pre-treatment processes at the facility include acid/ alkali pre-treatment system (AAPS), thermal desorber unit (TDU), land disposal restriction building (LDR), spent pot liner treatment (SPL), and organic debris treatment.

1.3 Ownership and Key Personnel

The Lambton Facility is owned and operated by Clean Harbors. Any environmental issues at the Site are addressed by the following personnel:

Ms. Erica Carabott, Senior Compliance Manager
Clean Harbors Canada, Inc.
4090 Telfer Road, Rural Route #1
Corunna, Ontario N0N 1G0
Phone: (519) 864-3890, E-mail: carabott.eric@cleanharbors.com

GHD was retained by Clean Harbors to conduct the 2016 annual monitoring program. The Competent Environmental Practitioner (CEP) who reviewed the 2016 Annual Surface Water Quality Monitoring Report is:

Mr. Jim Yardley, P.Eng.
GHD
651 Colby Drive
Waterloo, Ontario N2V 1C2
Phone: (519) 884-0510, E-mail: Jim.Yardley@GHD.com

1.4 Waste Disposal Site

The secure landfill occupies a total fill area of approximately 56 ha that includes the pre-1986 fill area, Cell 16 completed in 1992, Cell 17 completed in early 1998, and Cell 18 completed in early 2016. The current operational area (disposal area for landfilling at the Lambton Facility) is Sub-cell 19-1-1 and part of Sub-cell 19-1-2. The southern portion of Sub-cell 19-1-1 had interim cover placed at the end of 2016. The landfill disposal method and sequence is provided in the Design and Operations Report - Lambton Landfill Expansion (D&O Report) prepared by Tetra Tech WEI Inc. and dated October 8, 2015.

The 2015 vertical expansion of the Lambton Facility landfill means that the landfilled area will transition from a relatively flat/ shallow grade final contour (less than 5 percent grade) to a more traditional landfill shape (25 percent side slope and 5 percent top slope grades). The approved



surface water management system is presented in the August 2015 Stormwater Management Report (Appendix E of the D&O Report) The surface water management system is approved by the SW ECA and was designed to accommodate surface water for the proposed final contours.

The portion of the landfill area not directly used for landfilling contains drainage ditches, surface water ponds, access roads, and stockpiles of clay and topsoil. In the central portion of the landfill area, the site is used for some waste processing components such as the TDU, SPL, container storage, and leachate storage (covered ponds). Undeveloped buffer land and berms separate the landfill operation from surrounding properties. The perimeter ditches and surface water ponds side slopes are routinely inspected for stability and signs of erosion. Major site features are shown on Figure 2.

Additional information with regard to waste volumes received, landfill cell development, landfill operation and management, engineering controls, leachate management and incineration, and all other relevant waste disposal site developments during the current reporting period are presented within the Landfill Annual Monitoring Report.

1.5 Water Management System

The following presents a description of the Lambton Facility's water management system that includes surface water, process water, and leachate.

1.5.1 Surface Water Management

Surface water is generated from non-operational areas at the Lambton Facility. Non-impacted surface water runoff from undeveloped portions of the Site, perimeter berms, and capped and closed landfill cells, and waste disposal cells with interim cover is directed through a series of on-Site drainage ditches and ponds to the two on-Site surface water storage ponds (West Pond and East Pond). As the Site expansion occurs, additional surface water storage ponds will be created which are noted in the D&O Report as the Southwest Pond, North Pond 1, and North Pond 2.

The current surface water system has all of the non-impacted surface water from the northern portion of the landfill flow through drainage ditches along the interior toe of the north and east perimeter berm to the East Pond. Where required, pumps are used to move surface water that ponds due to poor drainage. Water from the East Pond is pumped to the southern ditch which directs the surface water to the West Pond. The West Pond receives surface water from the southwest section of the Pre-1986 disposal area.

The Lambton Facility's Surface Water Treatment Plant (SWTP) for processing surface water pumped from the West Pond is rated with a treatment capacity of 4,500 cubic metres per day (m^3/day). The SWTP consists of the following:

- Two influent pumps (including one standby), each with rated capacity of 22.7 litres per second (L/s) at 310 kilopascals (kPa) (300 imperial gallons per minute [IGPM] at 45 pounds per square inch gauge [psig]).
- Two sand filters, each with 3.6 m outside diameter and 1.8 m high, containing 6.4 m^3 of 0.3 mm of silica sand and 3.2 m^3 of 1.0 mm anthracite, equipped with backwash pump rated at 49.3 L/s at 138 kPa (650 IGPM at 20 psig).



- One activated carbon filter consisting of a concrete above-ground basin with overall dimension of 2.4 m high, 4.3 m long, and 1.8 m wide containing 1.2 m³ of 20 mm clear crushed stone and 14.2 m³ of granular activated carbon.

The SWTP is operated when the live surface water storage across the Site needs to be increased, often driven by precipitation events and seasonal periods of high water runoff. Each time upon startup the SWTP operates in recirculation mode until the effluent criteria established under Condition 10 of the SW ECA are met. If an exceedance of the effluent criteria is identified, the SWTP remains in recirculation mode until results are in compliance.

Once the effluent from the SWTP is compliance with the SW ECA criteria, the treated water is discharged to the Equalization Pond. The effluent is subsequently discharged via a gated channel to the municipal drainage ditch located along the eastern side of Telfer Road.

The SWTP is maintained by Clean Harbors staff through backwashing of the filter systems, and occasionally through replacement of the filter media.

1.5.2 Process Water Management

Surface water runoff from the operational areas is considered to be process water and is directed to one of the two process water ponds (North Process Water Pond, South Process Water Pond) either by ditches or through pumps, forcemains, or vacuum trucks. A new process water pond, West Process Water Pond, has been constructed and receives water from the South Process Water Pond through a forcemain. The three process water ponds store the process water on-Site until the process water is used for facility operations including quench water in the on-Site incinerator. The incinerator requires up to 11 million L of quench water per month. During a dry period and when process water is low, surface water will be used to provide quench water.

1.5.3 Leachate

Surface water generated from the active waste disposal area is treated as leachate. With the installation of the perimeter leachate collection system (LCS) as part of the overall landfill design, leachate is directed to the LCS. The LCS is designed to maintain a maximum leachate elevation at each pump station, and automatically pumps leachate via forcemain to a control sump, that pumps the leachate to either the equalization tank or one of the two covered leachate reservoirs. Leachate is extracted from the equalization tank and incinerated on-Site in the incinerator at a maximum approved rate of 35 LPM.

1.5.4 SWTP Maintenance

Maintenance of the SWTP is conducted as required to maintain treatment flow and water quality. The timing of the maintenance depends on the amount of water treated and the performance of the SWTP. During the current monitoring period, the following maintenance was conducted on the SWTP:

- Backwash on the following dates:
 - April 11 and 25; July 19 and 25; August 1, 19, 23, 26 and 29; September 1, 7, 9, 16, and 23, 2016.



- Recirculation on the following dates:
 - April 3, 4 and 5; September 10 and 11, 2016.
- Maintenance in 2016:
 - Overhead heater replaced
 - 6 inch SWTP water supply pump – Belts replaced
 - A 4 inch pump within the building was rebuilt

1.6 Limitations

GHD was retained by Clean Harbors to review, summarize, and report the data provided by Clean Harbors as it relates to the assessment of surface water conditions. Clean Harbors holds the responsibility for field instrument calibration, precision and accuracy, quality assurance/quality control of the collected data, and provision of documented field observations/inspections. GHD has assumed that the data collected and provided by Clean Harbors is valid and reliable for the purposes of producing this monitoring report.

2. Physical Setting

The Lambton Facility is a rectangular shaped piece of land situated on 121.4 ha parcel. The Lambton Facility is bordered on all sides by rural residential and agricultural land. The Site location is provided on Figure 1.

2.1 Geology and Hydrogeology

The Lambton Facility lies within the Lambton Clay Plain which is a sub-region of the St. Clair Clay Plain physiographic region. The surficial geology is characterized by thick clay sediments and the area's topography is flat to slightly undulating. The combination of relatively flat topography and the fine texture clay soil result in an area that has poor drainage. Alluvial sediments and organic deposits can be found in the local stream, stream valleys, and wetlands.

Detailed information on the geological and/or hydrogeological conditions at the Lambton Facility during the current monitoring period is presented in the 2016 Annual Groundwater Monitoring Report, prepared by RWDI.

2.2 Surface Water Features

The Lambton Facility resides within the Sydenham River basin watershed, which ultimately drain into Lake St. Clair. The main watercourse found in the Sydenham River watershed is Bear Creek. Bear Creeks is approximately 70 kilometres (km) in length and is fed by numerous tributaries including those found in the vicinity of the Lambton Facility and the downstream catchment area.

Seasonally intermittent flow conditions occur within the eastern Telfer roadside ditch immediately downstream of the Lambton Facility's Equalization Pond discharge occur and flow is normally related to a precipitation event or discharge from the Equalization Pond. Local drainage patterns downstream are heavily influenced by the nearby agricultural farms, in that the extensive tile



drainage and ditch system shave been constructed to deal with irrigation and rainfall in soils that have low infiltration.

3. Monitoring Program

3.1 Surface Water Monitoring

The surface water monitoring program was amended based on the letter prepared by GHD titled "Surface Water Monitoring Program and Surface Water Characterization Program, Lambton Facility, Corunna, Ontario" dated December 9, 2015. The revised surface water monitoring program, that includes the characterization program, was approved by the MOECC Regional Director on March 29, 2016. A copy of the letter is provided in Appendix I-1.

Surface water is stored and treated surface water is mainly discharged during the spring/ summer periods. As such, the surface water discharge quality is not influenced by a specific precipitation event, but provides a normal or consistent quality for a period of time and year over year.

The surface water monitoring program for the Site is summarized in Tables 2 and 3. The monitoring consists of daily discharge monitoring, monthly discharge monitoring conducted during discharge periods at on-site locations, and seasonal monitoring at off-site locations. The following sections provide information with regard to the surface water monitoring program. Surface water effluent discharge limits are presented in Table 4.

3.1.1 Daily Discharge Monitoring

Location:	Equalization Pond discharge
Frequency:	Daily when the Equalization Pond is discharging to the off-Site drainage ditch
Parameters:	pH, specific conductivity, total suspended solids (TSS), phenols, chloride, and solvent extractables (oil & grease)
Rationale:	The parameters represent routine parameters that are representative of general surface water quality during the discharge period and indicate the overall performance of the treatment plant. Four parameters have established Site-specific discharge criteria – pH, TSS, phenols, solvent extractables

3.1.2 Monthly Discharge Monitoring

The monthly discharge monitoring program consists of three components: chemical parameter monitoring, toxicity monitoring, and visual monitoring.

3.1.2.1 Monthly Discharge Chemical Monitoring

Location:	Equalization Pond discharge, West Pond, East Pond
Frequency:	a) At start of discharge, within 25 to 35 days after discharge commencement, and within 25 to 35 days after the previous sample collection when discharge occurring



b) If discharge ceases for less than 30 days and discharge recommences, the initial monitoring schedule shall continue. If discharge ceases for greater than 30 days, monitoring shall revert as per item a)

Parameters: General Chemistry, total metals, volatile organic compounds (VOC), and semi-volatile organic compounds (sVOC) as specified in Table 3

Rationale: Provides a detailed chemical profile of the water prior to and during discharge periods for both pre- and post-treatment of the water. Parameters represent chemical constituents that are accepted at the Lambton Facility and as such may be present in the surface water system

3.1.2.2 Toxicity Monitoring

Location: Equalization Pond discharge

Frequency: As per the monthly discharge chemical monitoring program

Parameters: Microtox for fresh water in accordance with Environment Canada test method and protocols

Rationale: Monitors the overall water quality toxicity with an approved program

3.1.2.3 Visual Observations

Location: Equalization Pond

Frequency: As per the monthly discharge chemical monitoring program

Parameters: Presence/ absence of fish in the Equalization Pond through observation with food application at several locations around the Equalization Pond perimeter

Rationale: Monitors whether fish are present in the pond and a general understanding of the overall health of the Equalization Pond and water quality with regard to aquatic life

3.1.3 Off-Site Surface Water Monitoring

Location: STN6 (upstream of discharge) and STN6A (downstream of discharge). See Figure 1 for monitoring locations

Frequency: Two samples per year, one in the spring and one in the late summer/ fall period. Samples to be collected when a discharge is occurring and on the same day as the monthly discharge samples are collected. The time period between the spring and late summer/fall sample should be a minimum of 80 days

Parameters: General Chemistry, total metals, volatile organic compounds (VOC), and semi-volatile organic compounds (sVOC) as specified in Table 3. Analytical testing to be conducted by external Canadian certified laboratory



Rationale: Provides a detailed chemical profile of the water in a downstream drainage system prior to and after the discharge of water from the drainage ditch that serves the facility. Parameters are consistent with the discharge monitoring parameters

3.2 Surface Water Characterization

The surface water characterization program noted in Condition 8 of the SW ECA relates to concerns expressed during the vertical expansion approval and the potential changes that may occur with the surface water management system due to changes in the landfill operations and methods. A key concern is the potential for dust/operational impacts since the initial disposal cells (Cell 19 and 20) are in close proximity to the West Pond, which is the main surface water storage pond prior to water treatment, and these cells will be filled in the first 5 years of the landfill expansion program.

Review of historic data associated with the Lambton Facility with regard to surface water and process water quality have indicated that metals are the dominate set of parameters that change as a result of operational changes or changes in disposal location. The VOC and sVOC parameters also indicate some differences, but these are sporadic and low level (below criteria).

The surface water characterization program monitoring has been incorporated within the surface water monitoring program by monitoring the East and West Ponds prior to and during discharge periods for general chemistry, metals, VOCs, and sVOCs. These represent periods when water is present within the ponds, or a period of long-term water storage. The monitoring for a period of five years after commencement of the landfill expansion will allow a database to be established that will provide a long-term database for the new surface water management set-up. Amendments to the surface water characterization program that is part of the surface water monitoring program will be handled through the annual monitoring program and any modifications would require the approval of the Regional Director.

3.3 Amendments to Surface Water Monitoring Program

Once a five-year database of surface water monitoring post-commencement of the landfill expansion has been collected, Clean Harbors may assess the data and recommend changes to the surface water monitoring program. The assessment will be conducted as part of the Annual Surface Water Quality Monitoring Report and specific amendments to the surface water program will be provided in the report recommendations section. Changes to the surface water monitoring program will require review by MOECC Regional staff and approval of the recommendations by the Regional Director. The first year of the amended monitoring program is 2016. The five-year review should occur in the 2020 Annual Surface Water Quality Monitoring Report.

Clean Harbors may collect additional surface water samples that relate to specific events or to collect additional information with regard to the management and operation of the surface water system. These additional events/ samples will only become part of the official monitoring program if recommended by Clean Harbors in the Annual Surface Water Quality Monitoring Report and approved by the Regional Director.



4. Monitoring Results and Assessment

4.1 Daily Discharge Monitoring

The results of the daily discharge monitoring for the Equalization Pond is presented in Table 5. As shown in Table 5, effluent was discharged during the following periods:

- Period 1: March 31, to April 2, 2016
- Period 2: April 6 to April 28, 2016
- Period 3: July 14 to August 2, 2016
- Period 4: August 16 to September 9, 2016
- Period 5: September 12 to 22, 2016

Effluent discharge presented in Table 4 during the noted periods were below the maximum discharge rate specified in the ECA.

As indicated in Table 5, during Period 1 an exceedance in TSS above the limit of 15.0 mg/L was measured on April 2, 2016 (16.2 mg/L). The SWTP was placed into recirculation mode so that the treatment process could be adjusted to bring the level of TSS into compliance with the discharge criteria. Discharge from the SWTP resumed April 6, 2016.

There were no further exceedances noted for discharge Periods 2 to 5.

Apart from the compliance monitoring, it is noted that the flow measured by the flow meter is somewhat erratic on the first day of discharge from the SWTP preventing an accurate measurement of flow. This issue typically appears to be resolved by the second day of discharge when flows can be recorded.

4.2 Monthly Discharge Monitoring

The results of the monthly discharge monitoring is presented in Tables 6 to 10 with analytical reports provided in Appendix I-2. An analytical data verification memo summarizing GHD's assessment of sample supporting quality assurance/ quality control (QA/QC) procedures is included in Appendix I-3. Where applicable, the data summarized in the tables have been qualified accordingly.

4.2.1 Monthly Discharge Chemical Monitoring

Monthly monitoring samples for the Equalization Pond for general chemistry, metals, VOCs, and sVOCs were taken on March 31, May 3, July 14, August 26, and September 22, 2016 from the Equalization Pond. The results of the monthly discharge chemical monitoring are presented in Table 6.



As compared to the Provincial Water Quality Objectives (PWQO), the analytical results were generally below the PWQO with exception of the following:

- Total phenolics above the objective of 0.001 mg/L on May 3 (0.0018), July 14 (0.0037J), August 26 (0.0031), and September 22 (0.0039J)
- Phosphorus above the objective of 0.01 mg/L on March 31 (0.0278), May 3 (0.0156), July 14 (0.0118J), August 26 (0.0142), and September 22 (0.0183J)
- Aluminum above the objective of 0.075 mg/L on March 31 (0.123) and May 3 (0.134)
- Boron above the objective of 0.2 mg/L on March 31 (0.291)
- Molybdenum above the objective of 0.04 mg/L on May 3 (0.0426), July 14 (0.0440), August 26 (0.0653), and September 22 (0.0637)
- bis(2-Ethylhexyl)phthalate (DEHP) above the objective of 0.6 µg/L on August 26 (12)

The qualifier of 'J' indicates an estimated value. The rationale for the qualification of a result is provided in the associated QA/QC memorandum provided in Appendix I-3.

It is noted that some of the analytical results for general chemistry (hexavalent Chromium VI, total cyanide, nitrate, and nitrite), for VOCs, and sVOCs taken on July 14, 2016 were qualified as rejected (R) as the temperature of the sample was above the required limit for analysis upon receipt by the lab. The sample temperature was above the required limit due to shipping of the collected sample without sufficient ice pack.

For the two periods starting August 16 and September 12, 2016, samples were collected on August 26 and September 22, 2016 rather than at the commencement of the period since the cessation of treatment was less than 30 days.

The off-site up-stream sample location, STN6, provides a general provides a the general surface water quality in the area. The Site has a clayey overburden and as such the surface water is impacted by the natural materials that present within the overburden. Comparison of the background sample is indicates that the of the 6 parameters noted to have an exceedance of the PWQOs, the background location has exceedances for total phenolics, phosphorus, aluminum and that the levels are similar, and in the case of phosphorus, higher. Molybdenum is slightly elevated over the background level. The other two parameters were detected above the PWQOs during one event, but do not indicate a trend at this time.

4.2.2 Toxicity Monitoring

Toxicity monitoring samples from the Equalization Pond were taken on April 12, May 3, August 2, August 29, and September 26, 2016. The results of the toxicity monitoring are presented in Table 7.

All samples analyzed were within the specified limits to characterize the samples as being non-toxic in accordance with the SW ECA.



4.2.3 Visual Observation

Quarterly visual Site inspections were undertaken by GHD on March 23, June 23, August 26, and November 10, 2016 including of the surface water management system. During each of the quarterly inspections, the presence of live fish in the Equalization Pond was confirmed.

A summary of the quarterly Site inspections are included in the Landfill Annual Monitoring Report.

4.2.4 Surface Water Characterization

Supplementary monitoring of the East and West Ponds for general chemistry, metals, VOCs, and sVOCs was undertaken on May 3, July 14, August 26, and September 22, 2016. The results of the chemical monitoring for the East and West Ponds are presented in Tables 8 and 9, respectively.

As compared to the PWQO, the analytical results for the East Pond were generally below the PWQO with exception of the following:

- Total phenolics above the objective of 0.001 mg/L on May 3 (0.0019), July 14 (0.0031J), August 26 (0.0025), and September 22 (0.0028J)
- Phosphorus above the objective of 0.01 mg/L on May 3 (0.0239), July 14 (0.0244J), August 26 (0.0223), and September 22 (0.0604J)
- Aluminum above the objective of 0.075 mg/L on May 3 (0.667), July 14 (0.377), August 26 (0.318), and September 22 (1.47)
- Iron above the objective of 0.3 mg/L on May 3 (0.599), July 14 (0.311), August 26 (0.351) and September 22 (1.18)
- Molybdenum above the objective of 0.04 mg/L on May 3 (0.0570), July 14 (0.126), August 26 (0.0780), and September 22 (0.0768)

As compared to the PWQO, the analytical results for the West Pond were generally below the PWQO with exception of the following:

- Total phenolics above the objective of 0.001 mg/L on May 3 (0.0041), July 14 (0.0042J), August 26 (0.0061), and September 22 (0.0044J)
- Phosphorus above the objective of 0.01 mg/L on May 3 (0.0328), July 14 (0.0191J), August 26 (0.0365), and September 22 (0.0217J)
- Aluminum above the objective of 0.075 mg/L on May 3 (0.517), July 14 (0.489), August 26 (0.770), and September 22 (0.117)
- Iron above the objective of 0.3 mg/L on May 3 (0.449), July 14 (0.359), and August 26 (0.874)
- Molybdenum above the objective of 0.04 mg/L on May 3 (0.0511), July 14 (0.0642), August 26 (0.0654), and September 22 (0.0653)

The qualifier of 'J' indicates an estimated value due to exceedance of the temperature for analysis upon receipt by the lab due to shipping of the collected sample without sufficient ice pack.

It is noted that some of the analytical results for general chemistry (hexavalent Chromium VI, total cyanide, nitrate, and nitrite), for VOCs, and sVOCs taken on July 14, 2016 were qualified as



rejected (R) as the temperature of the sample was above the required limit for analysis upon receipt by the lab. The sample temperature was above the required limit due to shipping of the collected sample without sufficient ice pack.

A comparison of the chemical monitoring to the Equalization Pond and off-Site monitoring locations discussed in Section 4.3 indicates the following:

- The analytical results for total phenolics and phosphorus at all five sampling locations is on approximately the same order of magnitude with no discernable trend noted between the concentrations at the five sampling locations.
- The concentrations of phosphorus are slightly higher at both the upstream and downstream off-Site sampling locations than the on-Site sampling locations.
- Individual concentrations of metals including aluminum, boron, and iron are generally higher in the East and West Ponds than the Equalization Pond although there are too few data points to indicate any discernable trend.
- Individual concentrations of total phosphorus and metals including aluminum, cobalt, copper, iron, and vanadium are consistently higher at the off-Site monitoring locations than the on-Site monitoring locations. The concentrations for aluminum and iron are generally an order of magnitude higher in the off-Site locations than for the on-Site locations.
- Individual concentrations of molybdenum were highest in the East Pond and lowest in the Equalization Pond indicating a decreasing trend as surface water travels through the surface water management system. Concentrations of molybdenum at the upstream and downstream off-Site sampling locations were below the laboratory detection limit.
- Comparison between the off-site background and on-site data indicates that the water is similar and is generally reflective of clay overburden (surface) water chemistry.

4.3 Off-Site Surface Water Monitoring

Supplementary chemical monitoring of the background (STN6) and downstream (STN6A) off-Site monitoring locations for general chemistry, metals, VOCs, and sVOCs were taken on May 3 and August 26, 2016. The results are presented on Table 10.

As compared to the PWQO, the analytical results for background station STN6 were generally below the PWQO with exception of the following:

- Total phenolics above the objective of 0.001 mg/L on May 3 (0.0012) and August 26 (0.0021)
- Phosphorus above the objective of 0.01 mg/L on May 3 (0.0959) and August 26 (0.756)
- Aluminum above the objective of 0.075 mg/L on May 3 (2.82) and August 26 (3.08)
- Cobalt above the objective of 0.0009 mg/L on August 26 (0.00123)
- Copper above the objective of 0.005 mg/L on August 26 (0.0060)
- Iron above the objective of 0.3 mg/L on May 3 (1.92) and August 26 (2.95)
- Vanadium above the objective of 0.006 mg/L on August 26 (0.00706)



As compared to the PWQO, the analytical results for the downstream station STN6A were generally below the PWQO with exception of the following:

- Total phenolics above the objective of 0.001 mg/L on May 3 (0.0015) and August 26 (0.0026)
- Phosphorus above the objective of 0.01 mg/L on May 3 (0.102) and August 26 (0.699)
- Aluminum above the objective of 0.075 mg/L on May 3 (3.05) and August 26 (3.04)
- Cobalt above the objective of 0.0009 mg/L on August 26 (0.00117)
- Copper above the objective of 0.005 mg/L on August 26 (0.0059)
- Iron above the objective of 0.3 mg/L on May 3 (2.03) and August 26 (2.83)
- Vanadium above the objective of 0.006 mg/L on August 26 (0.00682)

The off-site water quality is representative of a clay surface overburden regime with regard to the metal components and the phosphorus levels are representative of agricultural impacts.

A comparison of the chemical monitoring results for the upstream versus downstream off-Site monitoring locations indicates the following:

- The analytical results for all parameters analyzed are on approximately the same order of magnitude for both sampling locations.

5. Conclusions and Recommendations

5.1 Conclusions

Based on the findings as documented in this report, the following conclusions are provided:

1. SW ECA effluent criteria were met during each active day of discharge from the Equalization Pond except at the beginning of discharge Period 1 (April 2, 2016). Discharge operations were suspended immediately upon confirming exceedances in the discharge criteria with SWTP issues resolved in a timely manner to permit discharge for the remainder of the reporting period.
2. Based on analysis of the daily and monthly discharge chemical monitoring data collected during the monitoring period, no detrimental long-term trends for surface water quality were identified.
3. Based on comparison of the on- and off-Site surfacewater monitoring data, the surfacewater being collected and treated for discharge from the Lambton Facility is not having a detrimental effect on off-Site downstream water.
4. Comparison between the various on-site surface water monitoring locations indicate that the surface water quality improves as the water moves from the East Pond to the West Pond and through the SWTP and the equalization pond.
5. Toxicity monitoring indicates that none of the Equalization Pond samples collected in 2016 resulted in toxicity to microorganisms.



6. The surface water characterization has a limited data set, but no significant differences are noted between sampling locations.

5.2 Recommendations

The following recommendations are provided for consideration:

1. The monitoring programs detailed within this report and completed in accordance with the requirements of the MOECC-approved Surface Water Monitoring Program and Surface Water Characterization Program should continue in subsequent years.
2. All samples taken should be shipped with sufficient ice pack to ensure adequate temperature control for collected samples prior to receipt by the lab.

6. References

AECOM. 2014-2015 Annual Surface Water Report, Clean Harbors Lambton Facility. March 2016.

GHD (Formerly Conestoga-Rovers and Associates). Engineering and Design, Existing Conditions Report. October 2014.

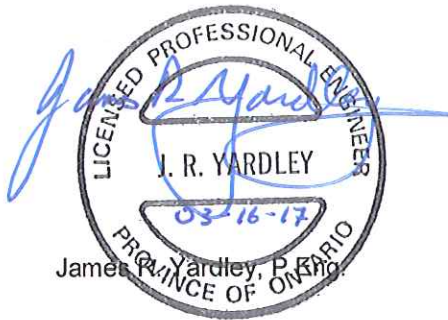
Tetra Tech WEI Inc. Design and Operations Report – Lambton Landfill Expansion, Clean Harbors Canada, Inc. – Lambton Landfill Site. October 2015.

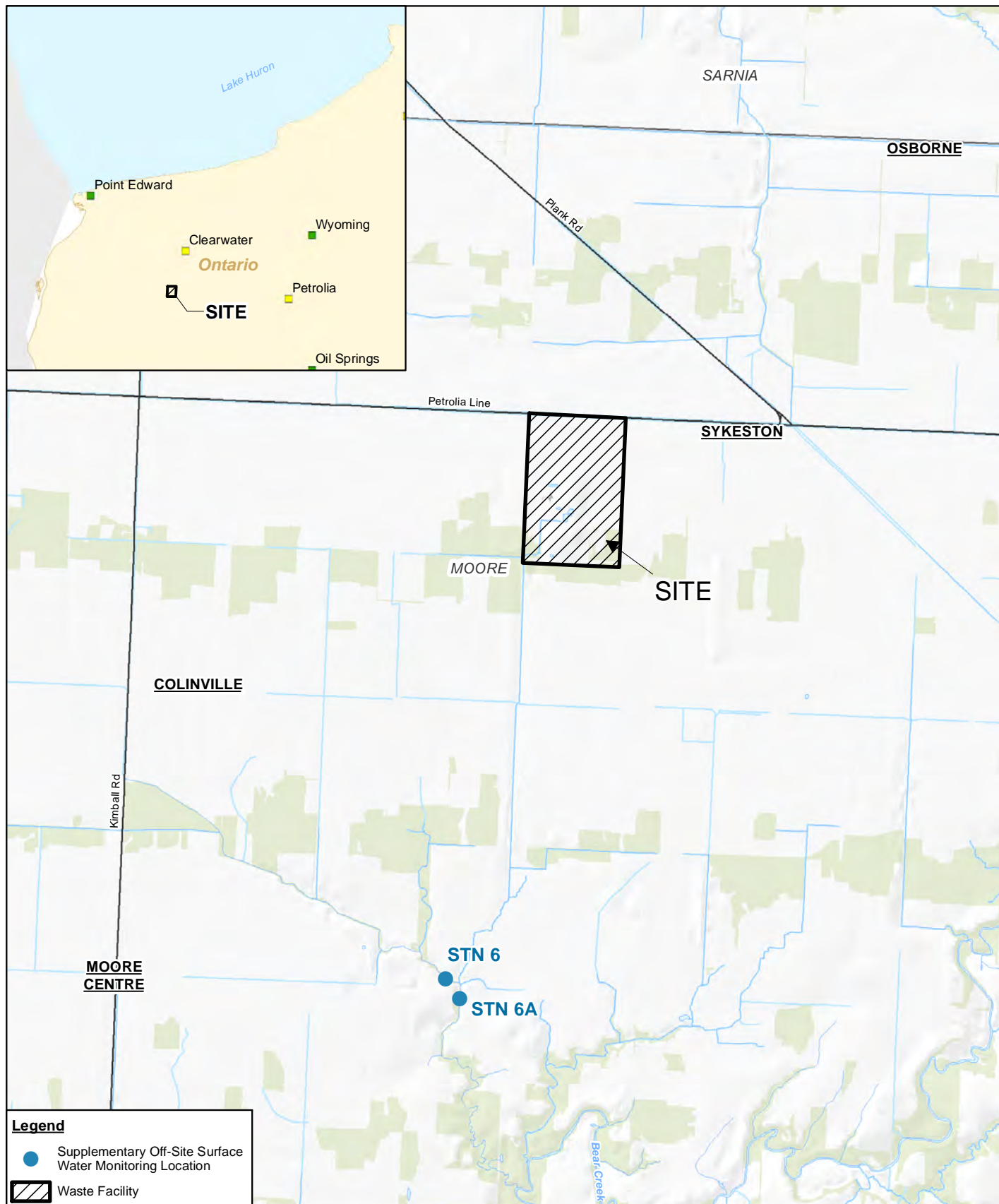


All of Which is Respectfully Submitted

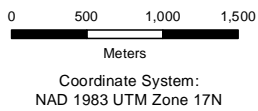
Diana Ball

Diana Ball, P.Eng.





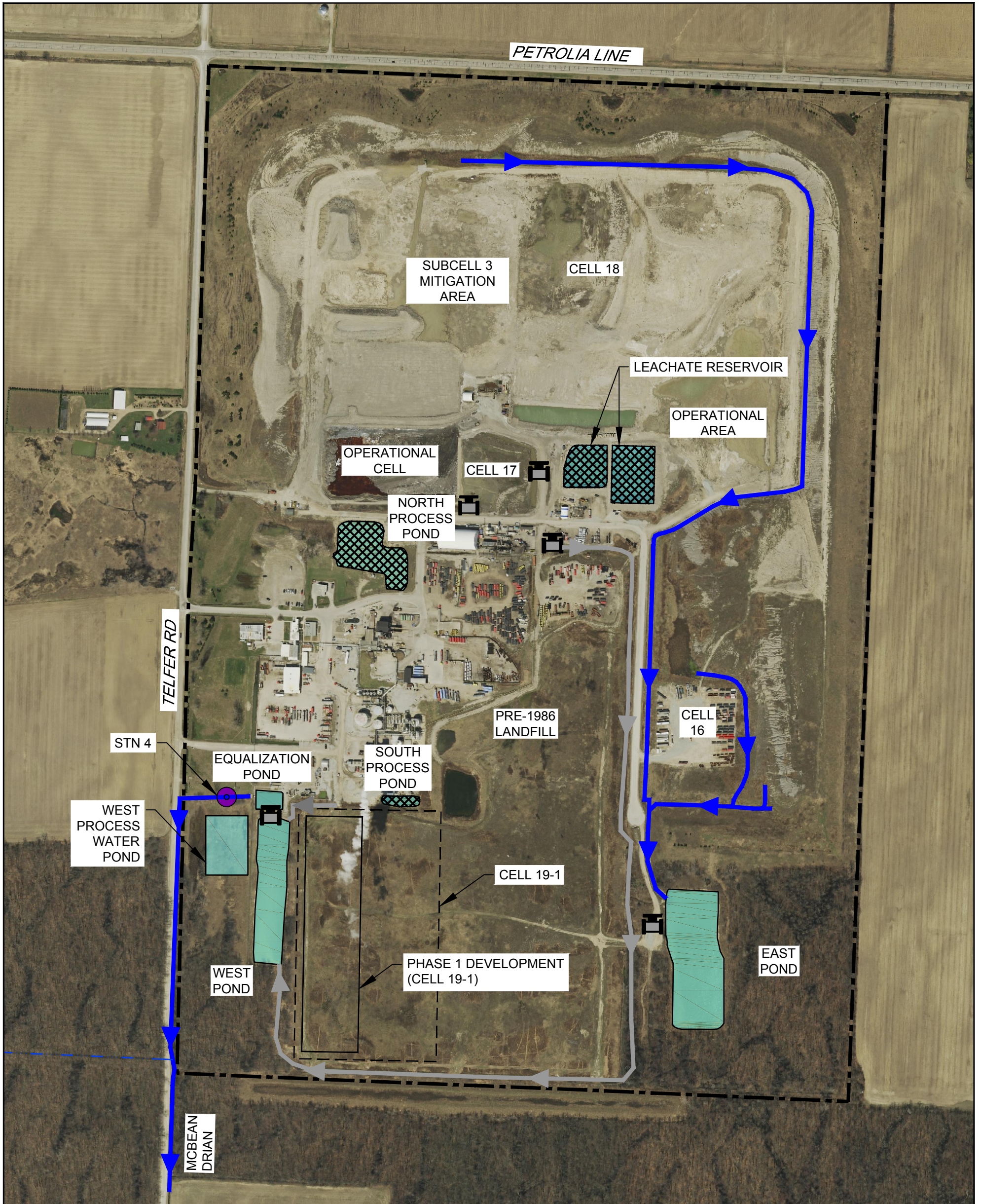
Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2017;











CLEAN HARBORS CANADA INC.
LAMBTON COUNTY, ONTARIO
SITE LOCATION AND
SUPPLEMENTARY OFF-SITE
MONITORING LOCATIONS

044985-20
Jan 13, 2017

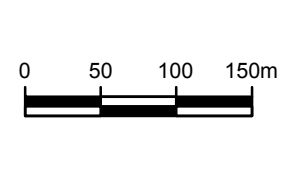
FIGURE 1



LEGEND

- | | | | |
|-------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
|  | PROPERTY LINE |  | LOCATION OF PUMPING EQUIPMENT |
|  | WATER QUALITY STATION |  | TREATED SURFACE WATER RESERVOIR |
|  | PRE-1986 LANDFILL DITCH SYSTEM |  | PROCESS RESERVOIR |
|  | POST-1988 LANDFILL DITCH SYSTEM |  | PERMANENT STREAM |

Source: SWOOP 2015.



CLEAN HARBORS
LAMBTON, ONTARIO
2016 ANNUAL SURFACE WATER QUALITY MONITORING REPORT

44985-98
Mar 3, 2017

SURFACE WATER MANAGEMENT SYSTEM

FIGURE 2

**Surface Water Monitoring Program
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Monitoring Location	Parameter ⁽¹⁾	Proposed Surface Water Sampling Program		
		Daily Discharge	Monthly Discharge	Spring and late Summer/Fall
Equalization Reservoir Discharge	pH, Conductivity, TSS, Total Phenols, Chloride, Solvent Extractables Microtox General Chemistry Metals VOCs sVOCs	■	■ ⁽²⁾ ■ ⁽²⁾ ■ ⁽²⁾ ■ ⁽²⁾ ■ ⁽²⁾	
Equalization Reservoir	Fish Presence		■	
West Pond	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
East Pond	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
STN6 (off-site background)	General Chemistry Metals			■ ⁽³⁾ ■ ⁽³⁾
STN6A (off-site downstream)	General Chemistry Metals			■ ⁽³⁾ ■ ⁽³⁾

Notes:

1. General Chemistry, metals, VOC, and sVOC parameters as per detailed list provided in Table 3.
 2. Prior to discharge sample would be collected from the Equalization Pond.
 3. Samples to be collected during discharge from Site and on same day as Monthly Discharge samples.
- VOC - Volatile Organic Compounds
SVOC - Semi-Volatile Organic Compounds
TSS - Total Suspended Solids

Surface Water Monitoring Parameters
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.

Parameter	Analytes
General Chemistry Parameters	Alkalinity (total as CaCO ₃), Ammonia-N, Bromide (dissolved), Chemical Oxygen Demand (COD), Chloride (dissolved), Conductivity (umhos/cm), Cyanide (total), Dissolved Organic Carbon (DOC), Fluoride, Hardness, Nitrate (as N), Nitrite (as N), pH (field), pH (lab), Phenolics (total), Phosphorus (total), Sulfate (dissolved), Temperature (field), Total Dissolved Solids (TDS), Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS), Un-ionized Ammonia
Metals (Total)	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium (Hexavalent), Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc
Volatile Organic Compounds (VOC)	1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dibromoethane (Ethylene dibromide), 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Butanone (Methyl ethyl ketone), 4-Methyl-2-pentanone (Methyl isobutyl ketone), Acetone, Benzene, Bromodichloromethane, Bromoform, Bromomethane (Methyl bromide), Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform (Trichloromethane), cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane (CFC-12), Ethylbenzene, Hexane, m&p-Xylenes, Methyl tert butyl ether (MTBE), Methylene chloride, o-Xylene, Styrene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane (CFC-11), Vinyl Chloride, Xylenes (total)
Semi-Volatile Organic Compounds (sVOC)	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1-Methylnaphthalene, 2,3,4,5-Tetrachlorophenol/2,3,4,6-Tetrachlorophenol, 2,3,6-Trichlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chlorophenol, 2-Methylnaphthalene, 3,3'-Dichlorobenzidine, 4-Chloroaniline, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene/Benzo(j)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2-Chloroethoxy)ether, bis(ethylhexy)phthalate (DEHP), Chrysene, Dibenz(a,h)anthracene, Diethyl phthalate, Dimethyl phthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorobutadiene, Indeno(1,2,3-cd)pyrene, Naphthalene, Pentachlorophenol, Perylene, Phenanthrene, Pyrene

Table 4

**Effluent Discharge Limits
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Effluent Parameter	Concentration Limit (mg/L) ⁽¹⁾
Total Suspended Solids (TSS)	15.0
Solvent Extractables	15.0
Phenols	0.02
pH of the effluent maintained between 5.5 to 9.5, inclusive, at all times	

Notes:

Source: SW ECA No. 1065-9VVJSW dated October 19, 2015.

1. Units of mg/L unless otherwise indicated.

Table 5

**Daily Chemical Analysis - Equalization Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Date	pH	Conductivity (mS/cm)	TSS (mg/L)	Phenol (mg/L)	Solvent			Flow Rate (LPM)	Daily Flow (L)	Comments
					Extractables (mg/L)	Chloride (mg/L)	Sulphate (mg/L)			
31-Mar-16	7.54	0.620	10.5	<0.0015	<5	72	129	Recirc	-	
1-Apr-16	7.40	0.610	8.1	<0.0015	<5	73.4	135	0	0	Start discharging @12:00
2-Apr-16	7.59	0.620	16.2	<0.0015	<5	74.7	139	1147	1,651,680	Resampled Equalization Reservoir @14:00, TSS=16.5ppm, Notified Shift Supervisor to shut down WTP
3-Apr-16			21.3						0	WTP still shut down
5-Apr-16	7.94	0.710	13.2	<0.0015	<5	67.1	127	Recirc	-	Microtox=Non-toxic
6-Apr-16	8.11	0.600	3.6	<0.0015	<5	72.9	140	634		First day of discharge
7-Apr-16	7.81	0.610	5.1	<0.0015	<5	74.9	146	1040	1,497,600	
8-Apr-16	7.88	0.749	3.7	<0.0015	<5	72	138	888	1,278,720	
9-Apr-16	7.57	0.611	7.3	<0.0015	<5	76	146	798	1,149,120	
10-Apr-16	6.75	0.728	3.2	<0.0015	<5	77	147	474	682,560	
11-Apr-16	7.04	0.740	5.1	<0.0015	<5	78.9	151	900	1,296,000	
12-Apr-16	7.56	0.760	4.2	0.0031	<5	77.2	148	882	1,270,080	
13-Apr-16	7.26	0.720	3.2	<0.0015	<5	77.6	151	1082	1,558,080	
14-Apr-16	7.72	0.702	6.4	<0.005	<5	79	150	1100	1,584,000	
15-Apr-16	7.98	0.779	2	<0.005	<5	77	150	1156	1,664,640	
16-Apr-16	7.93	0.769	3	<0.005	<5	75	153	1192	1,716,480	
17-Apr-16	7.89	0.720	2.5	<0.0015	<5	73.6	152	1170	1,684,800	
18-Apr-16	7.86	0.630	2.8	<0.0015	5.1	68.5	158	1042	1,500,480	
19-Apr-16	7.85	0.680	4.3	<0.0015	<5	66	161	1063	1,530,720	
20-Apr-16	7.27	0.699	2.7	<0.0015	<5	63	162	1050	1,512,000	Flowmeter still erratic
21-Apr-16	7.98	0.736	4.4	<0.0015	<5	61	165	1077	1,550,880	
22-Apr-16	8.11	0.712	1.6	0.00225	<5	61	172	985	1,418,400	
23-Apr-16	7.37	0.670	2.8	<0.0015	<5	58	173	818	1,177,920	
24-Apr-16	7.93	0.670	5.2	<0.0015	<5	57.3	177	770	1,108,800	
25-Apr-16	7.90	0.680	2.9	<0.0015	<5	57.8	178	702	1,010,880	
26-Apr-16	7.72	0.622	2	<0.005	<5	54	172	608	875,520	
27-Apr-16	8.01	0.716	4.7	<0.005	<5	55	176	1048	1,509,120	
28-Apr-16	7.73	0.684	3.6	<0.005	<5	56	178	1222	1,759,680	

Table 5

**Daily Chemical Analysis - Equalization Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Date	pH	Conductivity (mS/cm)	TSS (mg/L)	Phenol (mg/L)	Solvent		Sulphate (mg/L)	Flow Rate (LPM)	Daily Flow (L)	Comments
					Extractables (mg/L)	Chloride (mg/L)				
14-Jul-16	8.46	0.792	5.7	<0.005	<5	58	162	0	0	
15-Jul-16	7.94	0.799	14	<0.0015	<5	52	136	968	1,393,920	
16-Jul-16	7.00	0.750	2.9	<0.0015	<5	59.4	158	1083	1,559,520	
17-Jul-16	7.98	0.711	2	<0.0015	<5	65	170	962	1,385,280	
18-Jul-16	8.03	0.779	4	<0.005	<5	61	160	900	1,296,000	
19-Jul-16	8.19	0.822	3	<0.005	<5	54	140	740	1,065,600	
20-Jul-16	8.01	0.824	4	<0.005	<5	56	151	1077	1,550,880	
21-Jul-16	7.75	0.765	2	<0.005	<5	59	167	1008	1,451,520	
22-Jul-16	7.78	0.770	2	<0.005	<5	61	165	997	1,435,680	
23-Jul-16	7.48	0.760	0.85	<0.0015	<5	56.7	153.8	790	1,137,600	
24-Jul-16	7.55	0.740	0.7	<0.0015	<5	55.9	152.3	710	1,022,400	
25-Jul-16	7.67	0.770	4.1	<0.0015	<5	56	152.5	630	907,200	
26-Jul-16	7.45	0.690	4	0.0044	<5	52.3	145.5	930	1,339,200	
27-Jul-16	7.43	0.740	1.6	<0.0015	<5	54.1	153.8	930	1,339,200	
28-Jul-16	8.00	0.770	1.8	<0.0015	<5	52.3	156.5	980	1,411,200	
29-Jul-16	7.21	0.690	1.3	<0.0015	<5	50.8	160.1	960	1,382,400	
30-Jul-16	7.06	0.730	0.3	<0.0015	<5	50.3	166.3	840	1,209,600	
31-Jul-16	7.59	0.700	0.45	<0.0015	<5	50.2	166.7	735	1,058,400	
1-Aug-16	7.13	0.710	0.45	<0.0015	<5	49.6	167.5	660	950,400	
2-Aug-16	6.92	0.710	1.1	<0.0015	<5	50	171.5	960	1,382,400	
16-Aug-16	7.83	0.630	4	<0.0015	<5	50	160.5		0	
17-Aug-16	7.80	0.600	2.8	<0.0015	<5	49	152	988	1,422,720	
18-Aug-16	7.91	0.550	3.5	<0.0015	<5	48.1	150	175	252,000	
19-Aug-16	7.69	0.550	3.6	<0.0015	5.2	46.2	140	688	990,720	
20-Aug-16	7.75	0.570	2.7	<0.0015	<5	47.2	142	1050	1,512,000	
21-Aug-16	7.46	0.560	1.8	<0.0015	<5	45.2	134	730	1,051,200	
22-Aug-16	7.53	0.560	1.6	0.0023	<5	45	132	590	849,600	
23-Aug-16	7.78	0.560	1.4	<0.0015	<5	44.7	132	575	828,000	
24-Aug-16	7.45	0.505	2.6	<0.005	<5	43	129	1105	1,591,200	
25-Aug-16	7.82	0.550	<1	<0.005	<5	39	129	888	1,278,720	

Table 5

**Daily Chemical Analysis - Equalization Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Date	pH	Conductivity (mS/cm)	TSS (mg/L)	Phenol (mg/L)	Solvent			Flow Rate (LPM)	Daily Flow (L)	Comments
					Extractables (mg/L)	Chloride (mg/L)	Sulphate (mg/L)			
26-Aug-16	7.85	0.502	1	<0.005	<5	42	131	1000	1,440,000	
27-Aug-16	7.62	0.510	2.7	<0.0015	9.3	41.6	131	650	936,000	
28-Aug-16	7.74	0.540	5	<0.0015	<5	41.2	132	730	1,051,200	
29-Aug-16	8.02	0.510	4.3	<0.0015	<5	34.9	112	519	747,360	
30-Aug-10	7.93	0.496	2	<0.0015	<5	37	129	990	1,425,600	
31-Aug-16	7.66	0.520	1	<0.0015	<5	37	126	675	972,000	
1-Sep-16	7.29	0.548	1.1	<0.0015	<5	39	130	562	809,280	
2-Sep-16	7.86	0.520	1.6	<0.0015	<5	38.6	130	815	1,173,600	
3-Sep-16	7.78	0.500	1.8	<0.0015	<5	38.1	132	763	1,098,720	
4-Sep-16	7.88	0.530	1.7	<0.0015	<5	38.6	135	690	993,600	
5-Sep-16	8.22	0.519	<1	<0.005	<5	37	127	122	175,680	
6-Sep-16	8.00	0.521	<1	<0.005	<5	37	129	640	921,600	
7-Sep-16	8.01	0.526	<1	<0.005	<5	37	129	1050	1,512,000	
8-Sep-16	8.05	0.530	1.5	<0.0015	<5	37.2	131	700	1,008,000	
9-Sep-16	7.95	1.890	2.8	<0.0015	6	36.8	130	540	777,600	
12-Sep-16	8.00	0.550	3.5	<0.0015	<5	38	135		0	Ok for discharging
13-Sep-16	7.84	0.560	2.3	0.0019	<5	38	135	912	1,313,280	
14-Sep-16	8.05	0.500	0.5	<0.0015	<5	36.3	133	747	1,075,680	
15-Sep-16	7.96	0.440	2.1	<0.0015	<5	36.2	134	718	1,033,920	
16-Sep-16	7.95	0.500	2.4	<0.0015	<5	37.2	138	460	662,400	
17-Sep-16	8.02	0.495	3.3	<0.005	<5	35	131	897	1,291,680	
18-Sep-16	7.82	0.501	2	<0.005	<5	34	134	505	727,200	
19-Sep-16	8.01	0.507	2.5	<0.005	<5	35	140	150	216,000	
20-Sep-16	7.61	0.560	0.8	<0.0015	<5	34.9	138	980	1,411,200	
21-Sep-16	7.82	0.500	0.4	<0.0015	<5	33.8	135	660	950,400	
22-Sep-16	7.74	0.480	1.5	<0.0015	<5	33.4	134	450	648,000	

Notes:

Data and comments provided by Clean Harbours Canada Inc.

TSS - Total Suspended Solids

Phenol - Total Phenols

LPM - litres per minute

ppm - parts per million

Table 6

**Monthly Discharge Chemical Monitoring - Equalization Pond
General Chemistry, Metals, and VOCs/sVOCs
2016 Annual Surface Water Quality Monitoring Report
Clean Harbors Canada Inc.**

Sample Location:	EQ Pond	EQ Pond	EQ Pond	EQ Pond	EQ Pond		
Sample ID:	EQ POND	SW-44985-050316-MS-005	EQ POND	SW-44985-082616-MS-001	EQ POND		
Sample Date:	3/31/2016	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO					
General Chemistry							
Alkalinity, total (as CaCO ₃)	mg/L	-	119	130	91 J	107	118 J
Ammonia-N	mg/L	-	0.149	0.113	0.628 J	0.188	0.445 J
Bromide	mg/L	-	0.35	0.31	0.40 J	0.76	0.44 J
Chemical oxygen demand (COD)	mg/L	-	19	25	20 J	13	15 J
Chloride	mg/L	-	76.3	58.4	60.0 J	41.7	32.2 J
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)	ND (0.0010) R	ND (0.0010)	ND (0.0010) J
Conductivity	umhos/cm	-	713	752	675 J	588	582 J
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020) R	ND (0.0020)	ND (0.0020) J
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	6.5	6.4	4.4 J	3.8	4.2 J
Fluoride	mg/L	-	0.612	0.587	0.531 J	0.699	0.790 J
Hardness	mg/L	-	257	297	246 J	222	221 J
Nitrate (as N)	mg/L	-	0.114	0.218	ND (0.020) R	ND (0.020)	0.021 J
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	ND (0.010) R	ND (0.010)	0.012 J
pH, lab	s.u.	6.5-8.5	8.14	8.26	8.43 J	8.23	7.99 J
Phenolics (total)	mg/L	0.001	ND (0.0010)	0.0018	0.0037 J	0.0031	0.0039 J
Phosphorus	mg/L	0.01	0.0278	0.0156	0.0118 J	0.0142	0.0183 J
Sulfate	mg/L	-	122	164	157 J	123	125 J
Temperature, field	deg C	-	-	-	-	25.0	-
Total dissolved solids (TDS)	mg/L	-	463	460	412 J	365	377 J
Total kjeldahl nitrogen (TKN)	mg/L	-	0.75 J	0.41	0.99 J	0.50	0.86 J
Total suspended solids (TSS)	mg/L	-	10.4	4.8	2.8 J	2.5	ND (2.0) J
Field Parameters							
pH, field	s.u.	6.5-8.5	-	-	-	-	7.74
Temperature, field	deg C	-	-	-	-	-	21.0
Metals							
Aluminum	mg/L	0.075	0.123	0.134	0.031	0.053	0.043
Antimony	mg/L	0.02	0.00042	0.00056	0.00061	0.00055	0.00044
Arsenic	mg/L	0.005	0.00125	0.00094	0.00130	0.00216	0.00213
Barium	mg/L	-	0.0433	0.0379	0.0411	0.0388	0.0405
Beryllium	mg/L	1.1	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.291	0.172	0.179	0.128	0.120
Cadmium	mg/L	0.0002	0.000025	0.000039	0.000019	0.000022	ND (0.000030)
Calcium	mg/L	-	67.0	79.6	61.0	59.9	62.0
Cobalt	mg/L	0.0009	0.00019	0.00033	0.00013	0.00013	0.00010
Copper	mg/L	0.005	ND (0.0010)	0.0015	ND (0.0010)	ND (0.0010)	ND (0.0010)
Iron	mg/L	0.3	0.162	0.113	ND (0.050)	ND (0.050)	0.050

Monthly Discharge Chemical Monitoring - Equalization Pond
General Chemistry, Metals, and VOCs/sVOCs
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Clean Harbors Canada Inc.

Sample Location:	EQ Pond	EQ Pond	EQ Pond	EQ Pond	EQ Pond		
Sample ID:	EQ POND	SW-44985-050316-MS-005	EQ POND	SW-44985-082616-MS-001	EQ POND		
Sample Date:	3/31/2016	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO					
Lead	mg/L	0.005	0.00020	0.00022	ND (0.00010)	ND (0.00010)	ND (0.00010)
Magnesium	mg/L	-	21.9	23.8	22.8	17.5	16.1
Manganese	mg/L	-	0.0395	0.0135	0.00766	0.0342	0.0194
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.0196	0.0426	0.0440	0.0653	0.0637
Nickel	mg/L	0.025	0.0035	0.00268	0.00236	0.00200	0.00161
Potassium	mg/L	-	4.27	3.66	4.11	3.63	3.85
Selenium	mg/L	0.1	0.000977	0.00214	0.00149	0.00115	0.00123
Silicon	mg/L	-	0.814	1.37	0.378	0.892	1.01
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	43.4	36.1	38.6	29.1	23.9
Strontium	mg/L	-	0.494	0.597	0.573	0.517	0.533
Thallium	mg/L	0.0003	0.000019	0.000018	0.000030	ND (0.000020)	0.000019
Tin	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	ND (0.00050)	0.00055	ND (0.00050)	0.00056	ND (0.00050)
Zinc	mg/L	0.03	0.0033	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Volatiles							
1,1,1,2-Tetrachloroethane	µg/L	20	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,1-Trichloroethane	µg/L	10	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,2,2-Tetrachloroethane	µg/L	70	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,2-Trichloroethane	µg/L	800	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1-Dichloroethane	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1-Dichloroethene	µg/L	40	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
1,2-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dichloroethane	µg/L	100	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dichloropropane	µg/L	0.7	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,3-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,4-Dichlorobenzene	µg/L	4	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	400	ND (20)	ND (20)	ND (20) R	ND (20)	ND (20) J
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	ND (20)	ND (20)	ND (20) R	ND (20)	ND (20) J
Acetone	µg/L	-	22	ND (20)	ND (20) R	ND (20)	ND (20) J
Benzene	µg/L	100	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Bromodichloromethane	µg/L	200	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Bromoform	µg/L	60	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Bromomethane (Methyl bromide)	µg/L	0.9	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Carbon tetrachloride	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Chlorobenzene	µg/L	15	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Chloroethane	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J

Monthly Discharge Chemical Monitoring - Equalization Pond
General Chemistry, Metals, and VOCs/sVOCs
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Sample Location:			EQ Pond	EQ Pond	EQ Pond	EQ Pond	EQ Pond
Sample ID:			EQ POND	SW-44985-050316-MS-005	EQ POND	SW-44985-082616-MS-001	EQ POND
Sample Date:			3/31/2016	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016
Parameters	Units	PWQO					
Chloroform (Trichloromethane)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
cis-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
cis-1,3-Dichloropropene	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Dibromochloromethane	µg/L	40	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Dichlorodifluoromethane (CFC-12)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Ethylbenzene	µg/L	8	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Hexane	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
m&p-Xylenes	µg/L	2	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Methyl tert butyl ether (MTBE)	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Methylene chloride	µg/L	100	ND (2.0)	ND (2.0)	ND (2.0) R	ND (2.0)	ND (2.0) J
o-Xylene	µg/L	40	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Styrene	µg/L	4	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Tetrachloroethene	µg/L	50	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Toluene	µg/L	0.8	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,3-Dichloropropene	µg/L	7	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichloroethene	µg/L	20	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichlorofluoromethane (CFC-11)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Trihalomethanes	µg/L	-	-	-	ND (2.0) R	ND (2.0)	ND (2.0) J
Vinyl chloride	µg/L	600	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Xylenes (total)	µg/L	-	ND (1.1)	ND (1.1)	ND (1.1) R	ND (1.1)	ND (1.1) J
Semi-Volatiles							
1,2,4-Trichlorobenzene	µg/L	0.5	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,2-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,3-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,4-Dichlorobenzene	µg/L	4	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2,3,4,5-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (1.5) J
2,3,4,6-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (1.5) J
2,3,6-Trichlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4,5-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (1.5) J
2,4,6-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (1.5) J
2,4-Dichlorophenol	µg/L	0.2	ND (0.30)	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.90) J
2,4-Dimethylphenol	µg/L	10	ND (0.50)	ND (0.50) J	ND (0.50) R	ND (0.50)	ND (1.5) J
2,4-Dinitrophenol	µg/L	-	ND (1.0)	ND (2.0)	ND (1.0) R	ND (1.0)	ND (4.0) J
2,4-Dinitrotoluene	µg/L	4	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2,6-Dinitrotoluene	µg/L	6	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2-Chlorophenol	µg/L	7	ND (0.30)	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.90) J
2-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J

**Monthly Discharge Chemical Monitoring - Equalization Pond
General Chemistry, Metals, and VOCs/sVOCs
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Clean Harbors Canada Inc.**

Sample Location:	EQ Pond	EQ Pond	EQ Pond	EQ Pond	EQ Pond		
Sample ID:	EQ POND	SW-44985-050316-MS-005	EQ POND	SW-44985-082616-MS-001	EQ POND		
Sample Date:	3/31/2016	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO					
3,3'-Dichlorobenzidine	µg/L	0.6	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
4-Chloroaniline	µg/L	-	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
Acenaphthene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Acenaphthylene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Anthracene	µg/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)anthracene	µg/L	0.0004	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)pyrene	µg/L	-	ND (0.050)	ND (0.050)	ND (0.050) R	ND (0.050)	ND (0.050) J
Benzo(b)fluoranthene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(g,h,i)perylene	µg/L	0.00002	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(k)fluoranthene	µg/L	0.0002	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
bis(2-Chloroethyl)ether	µg/L	200	ND (0.40)	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	0.6	ND (2.0)	ND (2.0)	ND (2.0) R	12	ND (2.0) J
Chrysene	µg/L	0.0001	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dibenz(a,h)anthracene	µg/L	0.002	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Diethyl phthalate	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dimethyl phthalate	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	0.32	ND (0.20) J
Fluoranthene	µg/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Fluorene	µg/L	0.2	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Hexachlorobenzene	µg/L	0.0065	ND (0.040)	ND (0.040)	ND (0.040) R	ND (0.040)	ND (0.040) J
Hexachlorobutadiene	µg/L	0.009	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Indeno(1,2,3-cd)pyrene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Naphthalene	µg/L	7	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Pentachlorophenol	µg/L	0.5	ND (0.50)	ND (0.50)	ND (0.50) R	ND (0.50)	ND (1.5) J
Perylene	µg/L	0.00007	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Phenanthrene	µg/L	0.03	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Pyrene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).

J - Data qualified as an estimated concentration.

ND - Not detected at the associated reporting limit.

R - Data qualified as rejected due to insufficient sample preservation.

- - Not applicable.

1. Samples denoted by R were qualified as rejected as the sample temperature was above specified limits upon receipt by the lab due to insufficient ice pack during shipping.

**Monthly Discharge Chemical Monitoring – Equalization Pond
Microtox
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location:	EQ Pond	EQ Pond	EQ Pond	EQ Pond	EQ Pond	
Sample ID:	EQ POND	SW-44985-050316-MS-006	EQ POND	EQ POND	EQ POND	
Sample Date:	4/12/2016	5/3/2016	8/2/2016	8/29/2016	9/26/2016	
Parameters	Units					
Clarification	none	None	None	None	None	None
Color (true)	none	Colourless	Colourless	Colourless	Colourless	Colourless
EC 20 (15min)	%	>100	>100	>100	>100	>100
EC 20 (5min)	%	>100	>100	>100	>100	>100
EC 50 (15min)	%	>100	>100	>100	>100	>100
EC 50 (5min)	%	>100	>100	>100	>100	>100
Final pH	s.u.	7.6	7.9	7.6	7.7	7.8
Initial pH	s.u.	7.6	7.9	7.6	7.7	7.8
Interpretation	none	Non Toxic	Non Toxic	Non Toxic	Non Toxic	Non Toxic
Turbidity	none	None	None	None	None	None

Table 8

**Surface Water Characterization – East Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location:	East Pond	East Pond	East Pond	East Pond		
Sample ID:	SW-44985-050316-MS-004	EAST POND	SW-44985-082616-MS-003	EAST RETENTION POND		
Sample Date:	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO				
General Chemistry						
Alkalinity, total (as CaCO ₃)	mg/L	-	122	53 J	95	104 J
Ammonia-N	mg/L	-	ND (0.020)	1.61 J	2.93	4.06 J
Bromide	mg/L	-	0.30	1.36 J	0.78	0.47 J
Chemical oxygen demand (COD)	mg/L	-	26	26 J	25	36 J
Chloride	mg/L	-	38.7	42.0 J	25.5	26.3 J
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010) R	ND (0.0010)	ND (0.0010) J
Conductivity	umhos/cm	-	700	665 J	534	555 J
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020) R	ND (0.0020)	ND (0.0020) J
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	6.0	5.2 J	4.7	5.2 J
Fluoride	mg/L	-	0.645	1.10 J	0.816	0.838 J
Hardness	mg/L	-	310	250 J	210	236 J
Nitrate (as N)	mg/L	-	0.058	ND (0.020) R	ND (0.020)	ND (0.020) J
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010) R	ND (0.010)	ND (0.010) J
pH, lab	s.u.	6.5-8.5	8.41	8.23 J	8.22	8.16 J
Phenolics (total)	mg/L	0.001	0.0019	0.0031 J	0.0025	0.0028 J
Phosphorus	mg/L	0.01	0.0239	0.0244 J	0.0223	0.0604 J
Sulfate	mg/L	-	186	180 J	135	135 J
Temperature, field	Deg C	-	-	-	25.0	-
Total dissolved solids (TDS)	mg/L	-	451	388 J	343	373 J
Total kjeldahl nitrogen (TKN)	mg/L	-	0.46	2.12 J	2.76	4.75 J
Total suspended solids (TSS)	mg/L	-	21.0	9.5 J	11.4	24.4 J
Field Parameters						
pH, field	s.u.	6.5-8.5	-	-	-	7.87
Temperature, field	Deg C	-	-	-	-	21.0
Metals						
Aluminum	mg/L	0.075	0.667	0.377	0.318	1.47
Antimony	mg/L	0.02	0.00066	0.00095	0.00056	0.00061
Arsenic	mg/L	0.005	0.00122	0.00206	0.00206	0.00294
Barium	mg/L	-	0.0413	0.0478	0.0431	0.0599
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.095	0.109	0.094	0.104
Cadmium	mg/L	0.0002	ND (0.000080)	ND (0.000060)	0.000045	ND (0.000070)
Calcium	mg/L	-	82.9	65.8	59.6	66.0
Cobalt	mg/L	0.0009	0.00063	0.00035	0.00028	0.00069
Copper	mg/L	0.005	0.0022	0.0016	0.0017	0.0027

Table 8

**Surface Water Characterization – East Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location:	East Pond	East Pond	East Pond	East Pond		
Sample ID:	SW-44985-050316-MS-004	EAST POND	SW-44985-082616-MS-003	EAST RETENTION POND		
Sample Date:	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO				
Iron	mg/L	0.3	0.599	0.311	0.351	1.18
Lead	mg/L	0.005	0.00052	0.00038	0.00035	0.00094
Magnesium	mg/L	-	24.9	20.7	14.9	17.2
Manganese	mg/L	-	0.0372	0.0146	0.0174	0.0478
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.0570	0.126	0.0780	0.0768
Nickel	mg/L	0.025	0.00285	0.00258	0.00205	0.00342
Potassium	mg/L	-	3.97	4.46	3.95	4.83
Selenium	mg/L	0.1	0.00281	0.00258	0.00240	0.00184
Silicon	mg/L	-	2.35	1.50	1.59	4.44
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	27.4	32.7	21.0	22.2
Strontium	mg/L	-	0.712	0.580	0.567	0.610
Thallium	mg/L	0.0003	0.000041	0.000028	ND (0.000030)	0.000038
Tin	mg/L	-	0.00012	ND (0.00010)	ND (0.00010)	0.00016
Vanadium	mg/L	0.006	0.00155	0.00120	0.00105	0.00347
Zinc	mg/L	0.03	0.0037	ND (0.0030)	ND (0.0030)	0.0061
Volatiles						
1,1,1,2-Tetrachloroethane	µg/L	20	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,1-Trichloroethane	µg/L	10	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,2,2-Tetrachloroethane	µg/L	70	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1,2-Trichloroethane	µg/L	800	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1-Dichloroethane	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,1-Dichloroethene	µg/L	40	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
1,2-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dichloroethane	µg/L	100	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,2-Dichloropropane	µg/L	0.7	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,3-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
1,4-Dichlorobenzene	µg/L	4	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	400	ND (20)	ND (20) R	ND (20)	ND (20) J
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	ND (20)	ND (20) R	ND (20)	ND (20) J
Acetone	µg/L	-	ND (20)	ND (20) R	ND (20)	ND (20) J
Benzene	µg/L	100	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Bromodichloromethane	µg/L	200	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Bromoform	µg/L	60	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Bromomethane (Methyl bromide)	µg/L	0.9	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J

Table 8

**Surface Water Characterization – East Pond
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Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date:			East Pond SW-44985-050316-MS-004 5/3/2016	East Pond EAST POND 7/14/2016 ⁽¹⁾	East Pond SW-44985-082616-MS-003 8/26/2016	East Pond EAST RETENTION POND 9/22/2016
Parameters	Units	PWQO				
Carbon tetrachloride	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Chlorobenzene	µg/L	15	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Chloroethane	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Chloroform (Trichloromethane)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
cis-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
cis-1,3-Dichloropropene	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Dibromochloromethane	µg/L	40	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Dichlorodifluoromethane (CFC-12)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Ethylbenzene	µg/L	8	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Hexane	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
m&p-Xylenes	µg/L	2	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Methyl tert butyl ether (MTBE)	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Methylene chloride	µg/L	100	ND (2.0)	ND (2.0) R	ND (2.0)	ND (2.0) J
o-Xylene	µg/L	40	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Styrene	µg/L	4	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Tetrachloroethene	µg/L	50	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Toluene	µg/L	0.8	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,3-Dichloropropene	µg/L	7	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichloroethene	µg/L	20	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichlorofluoromethane (CFC-11)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Trihalomethanes	µg/L	-	-	ND (2.0) R	ND (2.0)	ND (2.0) J
Vinyl chloride	µg/L	600	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Xylenes (total)	µg/L	-	ND (1.1)	ND (1.1) R	ND (1.1)	ND (1.1) J
Semi-Volatiles						
1,2,4-Trichlorobenzene	µg/L	0.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,2-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,3-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,4-Dichlorobenzene	µg/L	4	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2,3,4,5-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,3,4,6-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,3,6-Trichlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4,5-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4,6-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4-Dichlorophenol	µg/L	0.2	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.30) J
2,4-Dimethylphenol	µg/L	10	ND (0.50) J	ND (0.50) R	ND (0.50)	ND (0.50) J

**Surface Water Characterization – East Pond
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Clean Harbors Canada Inc.**

Sample Location:	East Pond	East Pond	East Pond	East Pond		
Sample ID:	SW-44985-050316-MS-004	EAST POND	SW-44985-082616-MS-003	EAST RETENTION POND		
Sample Date:	5/3/2016	7/14/2016 ⁽¹⁾	8/26/2016	9/22/2016		
Parameters	Units	PWQO				
2,4-Dinitrophenol	µg/L	-	ND (2.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
2,4-Dinitrotoluene	µg/L	4	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2,6-Dinitrotoluene	µg/L	6	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2-Chlorophenol	µg/L	7	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.30) J
2-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
3,3'-Dichlorobenzidine	µg/L	0.6	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
4-Chloroaniline	µg/L	-	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
Acenaphthene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Acenaphthylene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Anthracene	µg/L	0.0008	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)anthracene	µg/L	0.0004	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)pyrene	µg/L	-	ND (0.10)	ND (0.050) R	ND (0.050)	ND (0.050) J
Benzo(b)fluoranthene	µg/L	-	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(g,h,i)perylene	µg/L	0.00002	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(k)fluoranthene	µg/L	0.0002	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
bis(2-Chloroethyl)ether	µg/L	200	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	0.6	ND (2.0)	ND (2.0) R	ND (2.0)	ND (2.0) J
Chrysene	µg/L	0.0001	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dibenz(a,h)anthracene	µg/L	0.002	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
Diethyl phthalate	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dimethyl phthalate	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Fluoranthene	µg/L	0.0008	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Fluorene	µg/L	0.2	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Hexachlorobenzene	µg/L	0.0065	ND (0.040)	ND (0.040) R	ND (0.040)	ND (0.040) J
Hexachlorobutadiene	µg/L	0.009	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Indeno(1,2,3-cd)pyrene	µg/L	-	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
Naphthalene	µg/L	7	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Pentachlorophenol	µg/L	0.5	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Perylene	µg/L	0.00007	ND (0.40)	ND (0.20) R	ND (0.20)	ND (0.20) J
Phenanthrene	µg/L	0.03	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Pyrene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).

J - Data qualified as an estimated concentration.

ND - Not detected at the associated reporting limit.

R - Data qualified as rejected due to insufficient sample preservation.

-- Not applicable.

1. Samples denoted by R were qualified as rejected as the sample temperature was above specified limits upon receipt by the lab due to insufficient ice pack during shipping.

Table 9

**Surface Water Characterization – West Pond
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Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date:		West Pond SW-44985-050316-MS-003 5/3/2016	West Pond WEST POND 7/14/2016 ⁽¹⁾	West Pond SW-44985-082616-MS-002 8/26/2016	West Pond WEST RETENTION POND 9/22/2016	
Parameters	Units	PWQO				
General Chemistry						
Alkalinity, total (as CaCO ₃)	mg/L	-	132	93 J	108	107 J
Ammonia-N	mg/L	-	ND (0.020)	0.538 J	0.713	1.94 J
Bromide	mg/L	-	0.35	0.76 J	0.71	0.46 J
Chemical oxygen demand (COD)	mg/L	-	40	25 J	21	22 J
Chloride	mg/L	-	59.8	57.8 J	38.8	33.0 J
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010) R	ND (0.0010)	ND (0.0010) J
Conductivity	umhos/cm	-	732	659 J	575	574 J
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020) R	ND (0.0020)	ND (0.0020) J
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	8.8	6.1 J	5.3	5.1 J
Fluoride	mg/L	-	0.542	0.658 J	0.747	0.816 J
Hardness	mg/L	-	314	230 J	220	233 J
Nitrate (as N)	mg/L	-	0.135	ND (0.020) R	0.025	ND (0.020) J
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010) R	ND (0.010)	ND (0.010) J
pH, lab	s.u.	6.5-8.5	8.34	8.44 J	8.03	8.18 J
Phenolics (total)	mg/L	0.001	0.0041	0.0042 J	0.0061	0.0044 J
Phosphorus	mg/L	0.01	0.0328	0.0191 J	0.0365	0.0217 J
Sulfate	mg/L	-	161	153 J	123	126 J
Temperature, field	Deg C	-	-	-	25.0	-
Total dissolved solids (TDS)	mg/L	-	450	395 J	364	374 J
Total kjeldahl nitrogen (TKN)	mg/L	-	0.68	1.6 J	1.18	3.13 J
Total suspended solids (TSS)	mg/L	-	25.7	19.0 J	19.8	2.0 J
Field Parameters						
pH, field	s.u.	6.5-8.5	-	-	-	8.14
Temperature, field	Deg C	-	-	-	-	21.0
Metals						
Aluminum	mg/L	0.075	0.517	0.489	0.770	0.117
Antimony	mg/L	0.02	0.00070	0.00064	0.00056	0.00051
Arsenic	mg/L	0.005	0.00139	0.00196	0.00279	0.00270
Barium	mg/L	-	0.0425	0.0372	0.0432	0.0420
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.179	0.165	0.137	0.132
Cadmium	mg/L	0.0002	ND (0.000080)	ND (0.000030)	0.000036	ND (0.000040)
Calcium	mg/L	-	82.2	55.8	60.9	64.0
Cobalt	mg/L	0.0009	0.00055	0.00035	0.00051	0.00016
Copper	mg/L	0.005	0.0022	0.0014	0.0016	ND (0.0010)

Table 9

**Surface Water Characterization – West Pond
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Sample Location: Sample ID: Sample Date:		West Pond SW-44985-050316-MS-003 5/3/2016	West Pond WEST POND 7/14/2016 ⁽¹⁾	West Pond SW-44985-082616-MS-002 8/26/2016	West Pond WEST RETENTION POND 9/22/2016
Parameters	Units	PWQO			
Iron	mg/L	0.3	0.449	0.359	0.874
Lead	mg/L	0.005	0.00039	0.00029	0.00065
Magnesium	mg/L	-	26.3	22.0	16.6
Manganese	mg/L	-	0.0484	0.0173	0.0639
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.0511	0.0642	0.0654
Nickel	mg/L	0.025	0.00330	0.00278	0.00313
Potassium	mg/L	-	4.38	3.70	3.72
Selenium	mg/L	0.1	0.00216	0.00148	0.00127
Silicon	mg/L	-	2.28	1.30	2.23
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	37.9	38.3	26.6
Strontium	mg/L	-	0.598	0.489	0.516
Thallium	mg/L	0.0003	0.000024	0.000014	ND (0.000030)
Tin	mg/L	-	0.00012	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00135	0.00133	0.00195
Zinc	mg/L	0.03	0.0030	ND (0.0030)	0.0155
Volatiles					
1,1,1,2-Tetrachloroethane	µg/L	20	ND (0.50)	ND (0.50) R	ND (0.50)
1,1,1-Trichloroethane	µg/L	10	ND (0.50)	ND (0.50) R	ND (0.50)
1,1,2,2-Tetrachloroethane	µg/L	70	ND (0.50)	ND (0.50) R	ND (0.50)
1,1,2-Trichloroethane	µg/L	800	ND (0.50)	ND (0.50) R	ND (0.50)
1,1-Dichloroethane	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)
1,1-Dichloroethene	µg/L	40	ND (0.50)	ND (0.50) R	ND (0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5	ND (0.20)	ND (0.20) R	ND (0.20)
1,2-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50) R	ND (0.50)
1,2-Dichloroethane	µg/L	100	ND (0.50)	ND (0.50) R	ND (0.50)
1,2-Dichloropropane	µg/L	0.7	ND (0.50)	ND (0.50) R	ND (0.50)
1,3-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50) R	ND (0.50)
1,4-Dichlorobenzene	µg/L	4	ND (0.50)	ND (0.50) R	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	400	ND (20)	ND (20) R	ND (20)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	ND (20)	ND (20) R	ND (20)
Acetone	µg/L	-	ND (20)	ND (20) R	ND (20)
Benzene	µg/L	100	ND (0.50)	ND (0.50) R	ND (0.50)
Bromodichloromethane	µg/L	200	ND (1.0)	ND (1.0) R	ND (1.0)
Bromoform	µg/L	60	ND (1.0)	ND (1.0) R	ND (1.0)
Bromomethane (Methyl bromide)	µg/L	0.9	ND (0.50)	ND (0.50) R	ND (0.50)
Carbon tetrachloride	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)

Table 9

**Surface Water Characterization – West Pond
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Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date:			West Pond SW-44985-050316-MS-003 5/3/2016	West Pond WEST POND 7/14/2016 ⁽¹⁾	West Pond SW-44985-082616-MS-002 8/26/2016	West Pond WEST RETENTION POND 9/22/2016
Parameters	Units	PWQO				
Chlorobenzene	µg/L	15	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Chloroethane	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Chloroform (Trichloromethane)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
cis-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
cis-1,3-Dichloropropene	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Dibromochloromethane	µg/L	40	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Dichlorodifluoromethane (CFC-12)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Ethylbenzene	µg/L	8	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Hexane	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
m&p-Xylenes	µg/L	2	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Methyl tert butyl ether (MTBE)	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Methylene chloride	µg/L	100	ND (2.0)	ND (2.0) R	ND (2.0)	ND (2.0) J
o-Xylene	µg/L	40	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Styrene	µg/L	4	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Tetrachloroethene	µg/L	50	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Toluene	µg/L	0.8	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
trans-1,3-Dichloropropene	µg/L	7	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichloroethene	µg/L	20	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Trichlorofluoromethane (CFC-11)	µg/L	-	ND (1.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
Trihalomethanes	µg/L	-	-	ND (2.0) R	ND (2.0)	ND (2.0) J
Vinyl chloride	µg/L	600	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Xylenes (total)	µg/L	-	ND (1.1)	ND (1.1) R	ND (1.1)	ND (1.1) J
Semi-Volatiles						
1,2,4-Trichlorobenzene	µg/L	0.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,2-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,3-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1,4-Dichlorobenzene	µg/L	4	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
1-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2,3,4,5-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,3,4,6-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,3,6-Trichlorophenol	µg/L	-	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4,5-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4,6-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4-Dichlorophenol	µg/L	0.2	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.30) J
2,4-Dimethylphenol	µg/L	10	ND (0.50) J	ND (0.50) R	ND (0.50)	ND (0.50) J
2,4-Dinitrophenol	µg/L	-	ND (2.0)	ND (1.0) R	ND (1.0)	ND (1.0) J
2,4-Dinitrotoluene	µg/L	4	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J

**Surface Water Characterization – West Pond
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date:			West Pond SW-44985-050316-MS-003 5/3/2016	West Pond WEST POND 7/14/2016 ⁽¹⁾	West Pond SW-44985-082616-MS-002 8/26/2016	West Pond WEST RETENTION POND 9/22/2016
Parameters	Units	PWQO				
2,6-Dinitrotoluene	µg/L	6	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
2-Chlorophenol	µg/L	7	ND (0.30)	ND (0.30) R	ND (0.30)	ND (0.30) J
2-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
3,3'-Dichlorobenzidine	µg/L	0.6	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
4-Chloroaniline	µg/L	-	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
Acenaphthene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Acenaphthylene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Anthracene	µg/L	0.0008	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)anthracene	µg/L	0.0004	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(a)pyrene	µg/L	-	ND (0.050)	ND (0.050) R	ND (0.050)	ND (0.050) J
Benzo(b)fluoranthene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(g,h,i)perylene	µg/L	0.00002	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Benzo(k)fluoranthene	µg/L	0.0002	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
bis(2-Chloroethyl)ether	µg/L	200	ND (0.40)	ND (0.40) R	ND (0.40)	ND (0.40) J
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	0.6	ND (2.0)	ND (2.0) R	ND (2.0)	ND (2.0) J
Chrysene	µg/L	0.0001	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dibenz(a,h)anthracene	µg/L	0.002	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Diethyl phthalate	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Dimethyl phthalate	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Fluoranthene	µg/L	0.0008	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Fluorene	µg/L	0.2	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Hexachlorobenzene	µg/L	0.0065	ND (0.040)	ND (0.040) R	ND (0.040)	ND (0.040) J
Hexachlorobutadiene	µg/L	0.009	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Indeno(1,2,3-cd)pyrene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Naphthalene	µg/L	7	0.26	ND (0.20) R	ND (0.20)	ND (0.20) J
Pentachlorophenol	µg/L	0.5	ND (0.50)	ND (0.50) R	ND (0.50)	ND (0.50) J
Perylene	µg/L	0.00007	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Phenanthrene	µg/L	0.03	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J
Pyrene	µg/L	-	ND (0.20)	ND (0.20) R	ND (0.20)	ND (0.20) J

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).

J - Data qualified as an estimated concentration.

ND - Not detected at the associated reporting limit.

R - Data qualified as rejected due to insufficient sample preservation.

-- Not applicable.

1. Samples denoted by R were qualified as rejected as the sample temperature was above specified limits upon receipt by the lab due to insufficient ice pack during shipping.

Table 10

**Off-Site Surface Water Monitoring
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location:	Background				Downstream	
	STN6	STN6	STN6A	STN6A	STN6A	STN6A
Sample ID:	SW-44985-050316-NS-002	SW-44985-082616-MS-005	SW-44985-050316-NS-001	SW-44985-050316-NS-001	SW-44985-082616-MS-004	SW-44985-082616-MS-004
Sample Date:	5/3/2016	8/26/2016	5/3/2016	5/3/2016	8/26/2016	8/26/2016
Parameters	Units	PWQO				
General Chemistry						
Alkalinity, total (as CaCO ₃)	mg/L	-	176	199	177	197
Ammonia-N	mg/L	-	0.053	6.60	0.074	2.82
Bromide	mg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Chemical oxygen demand (COD)	mg/L	-	42	60	43	59
Chloride	mg/L	-	24.4	34.2	24.7	34.9
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
Conductivity	umhos/cm	-	568	540	566	543
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	11.3	15.9	11.6	14.9
Fluoride	mg/L	-	0.216	0.234	0.226	0.243
Hardness	mg/L	-	285	238	283	239
Nitrate (as N)	mg/L	-	10.1	1.96	10.2	1.89
Nitrite (as N)	mg/L	-	0.021	0.029	0.021	0.026
pH, lab	s.u.	6.5-8.5	8.12	8.12	8.12	8.08
Phenolics (total)	mg/L	0.001	0.0012	0.0021	0.0015	0.0026
Phosphorus	mg/L	0.01	0.0959	0.756	0.102	0.699
Sulfate	mg/L	-	43.6	29.9	43.5	32.2
Temperature, field	deg C	-	-	25.0	-	25.0
Total dissolved solids (TDS)	mg/L	-	384	356	378	384
Total kjeldahl nitrogen (TKN)	mg/L	-	1.42	5.61	1.54	3.70
Total suspended solids (TSS)	mg/L	-	18.7	39.2	23.9	35.6
Metals						
Aluminum	mg/L	0.075	2.82	3.08	3.05	3.04
Antimony	mg/L	0.02	0.00013	0.00022	0.00015	0.00023
Arsenic	mg/L	0.005	0.00093	0.00263	0.00095	0.00262
Barium	mg/L	-	0.0368	0.0469	0.0374	0.0460
Beryllium	mg/L	1.1	ND (0.00010)	0.00012	ND (0.00010)	0.00012
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.037	0.060	0.037	0.063
Cadmium	mg/L	0.0002	0.000046	0.000077	0.000051	0.000075

**Off-Site Surface Water Monitoring
2016 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date:			Background		Downstream	
			STN6	STN6	STN6A	STN6A
			SW-44985-050316-NS-002 5/3/2016	SW-44985-082616-MS-005 8/26/2016	SW-44985-050316-NS-001 5/3/2016	SW-44985-082616-MS-004 8/26/2016
Parameters	Units	PWQO				
Calcium	mg/L	-	69.6	62.5	69.2	62.7
Cobalt	mg/L	0.0009	0.00071	0.00123	0.00079	0.00117
Copper	mg/L	0.005	0.0037	0.0060	0.0037	0.0059
Iron	mg/L	0.3	1.92	2.95	2.03	2.83
Lead	mg/L	0.005	0.00097	0.00170	0.00104	0.00157
Magnesium	mg/L	-	27.1	19.9	26.7	19.9
Manganese	mg/L	-	0.0185	0.0398	0.0211	0.0386
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.00343	0.00618	0.00344	0.00733
Nickel	mg/L	0.025	0.00329	0.00531	0.00343	0.00554
Potassium	mg/L	-	2.53	6.23	2.62	6.00
Selenium	mg/L	0.1	0.00131	0.00101	0.00140	0.000923
Silicon	mg/L	-	8.45	11.9	8.89	11.6
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	11.8	15.3	12.0	16.1
Strontium	mg/L	-	0.215	0.219	0.214	0.222
Thallium	mg/L	0.0003	0.000040	0.000055	0.000040	0.000054
Tin	mg/L	-	ND (0.00010)	0.00014	ND (0.00010)	0.00015
Vanadium	mg/L	0.006	0.00543	0.00706	0.00589	0.00682
Zinc	mg/L	0.03	0.0084	0.0147	0.0097	0.0156

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).
 ND - Not detected at the associated reporting limit.
 - - Not applicable.

Appendix I

Appendix I.1
Letter to Erica Carabott from GHD Re:
Surface Water Monitoring Program and
Surface Water Characterization Program
dated December 9, 2015



December 9, 2015

Reference No. 044985

Ms. Erica Carabott
Facility Compliance Manager
Clean Harbors Canada, Inc.
4090 Telfer Road, RR #1
Corunna, Ontario
N0N 1G0

Dear Ms. Carabott:

**Re: Surface Water Monitoring Program and Surface Water Characterization Program
Lambton Facility, Corunna, Ontario**

1. Introduction

Clean Harbors Canada Inc. (Clean Harbors) operates a hazardous waste disposal facility in Corunna, Ontario. The solid hazardous waste landfill component located at the facility operates in accordance with ECA A031806 (Waste ECA) issued by the Ministry of Environment and Climate Change (MOECC). The most recent amendment is Notice 9 dated October 19, 2015. The surface water management system at the facility is operated and management in accordance with ECA 1065-9VVJSW dated October 19, 2015 (SW ECA). Both the Waste and SW ECA have conditions that relate to surface water monitoring requirements.

Condition 9(a)(i) of the Waste ECA requires that by December 15, 2015 Clean Harbors submit an updated surface water monitoring program to the Regional Director for approval, while Condition 8 of the SW ECA requires that within six (6) months of issuance that Clean Harbors prepare and submit to the Director for approval a proposal for the characterization of storm water from the facility. This letter provides the proposed surface water monitoring program (Section 3.1) and the proposed storm water characterization program (Section 3.2).

2. Current Surface Water Monitoring Program

The surface water monitoring program that was conducted in 2015 was developed over the years and reflects monitoring requirements that were initiated to address a specific issue or to understand how the surface water system was operating after initial construction. Portions of the surface water monitoring program were conducted as a result of ECA requirements, while other portions were conducted by Clean Harbors based on their decisions over the years.

The surface water management system at the facility is unique when compared to other surface water management systems at waste disposal operations in Ontario. All surface water released from the

facility is required to be treated prior to discharge; as well, surface water is used as quench water for the incinerator during portions of the year. In addition, the surface water system is designed to accommodate the final landfill design, thus providing additional storage during the active disposal period. As such, the facility has large surface water storage ponds and historically discharges treated surface water during May to September of each year with no to minimal discharge during the October to April period.

The surface water at the facility represents water generated during precipitation events from the perimeter buffer zones and portions of the disposal area that have final or interim cover applied. Storm water from areas of the facility that are active with regard to waste movement and disposal operations have a separate water collection and storage system and the water is classified as process water. Water that is generated from the active disposal cells is classified as leachate and stored within covered leachate ponds. Both the process water and leachate generated are disposed of in the incinerator.

Understanding the operation of the surface water system is a key component that must be incorporated into the monitoring and characterization programs. Attachment A provides the current configuration of the surface water system (prior to construction of works proposed in the Waste ECA and SW ECA). Amendments to the surface water system will be conducted as the active disposal area moves to that specific area of the Site.

The current surface water monitoring program conducted is based on monitoring events being conducted when a discharge from the facility is occurring. The monitoring consists of daily monitoring of key indicator parameters associated with surface water quality, monitoring of chemical parameters during the initial discharge and later during the discharge period for both on-site and off-site locations, monitoring of acute and chronic toxicity of the discharge, and benthic monitoring of the Equalization Pond (EQ Pond) that stores the treated water prior to discharge. Table 1 provides a summary of the current monitoring program for reference purposes.

3. Surface Water Monitoring and Characterization Program

3.1 Surface Water Monitoring

A review of the last few surface water annual reports and associated data was provided to assess the general surface water quality and the value of specific tests, as well as how the surface water system operates, and will operate in the future. Monitoring results have not indicated an issue with the surface water quality over the years. When issues have been noted, operational adjustments have been made to eliminate the potential source/concern with the objective of maintaining a satisfactory surface water quality for the overall facility.

Surface water is stored for the majority of the year and the treated surface water is mainly discharged during the spring/summer periods. As such, the surface water discharge quality is not influenced by a specific precipitation event, but provides a normal or consistent quality for a period of time and year over year. Acute and chronic toxicity have been conducted for more than 15 years and have not indicated issues. As such acute and chronic toxicity monitoring is proposed to be removed from the monitoring program, and be replaced with additional assessment of chemical parameters that will

allow trends and early detection of potential concerns. As well, the EQ pond currently has a sustainable fish population and the presence of fish provide a general indicator of toxicity to aquatic species.

The proposed surface water monitoring program for the Site is summarized on Table 2. The monitoring consists of daily discharge monitoring, monthly discharge monitoring conducted during discharge periods at on-site locations, and seasonal monitoring at off-site locations. The following section provides information with regard to the proposed surface water monitoring program.

3.1.1 Daily Discharge Monitoring

Location: EQ Pond discharge

Frequency: Daily when the EQ Pond is discharging to the off-site drainage ditch

Parameters: pH, specific conductivity, total suspended solids (TSS), phenols, chloride, and solvent extractables (oil & grease). Analysis to be conducted by either Clean Harbors laboratory or external laboratory.

Rationale: The parameters represent routine parameters that are representative of general surface water quality during the discharge period and will indicate the overall performance of the treatment plant. Four parameters have established site specific discharge criteria – pH, TSS, phenols, solvent extractables.

3.1.2 Monthly Discharge Monitoring

The monthly discharge monitoring program consists of three components: chemical parameter monitoring, toxicity monitoring and visual monitoring.

3.1.2.1 Monthly Discharge Chemical Monitoring

Location: EQ Pond discharge, West Storm Water Pond, East Storm Water Pond

Frequency: a) Prior to discharge, within 25 to 35 days after discharge commencement, and within 25 to 35 days after the previous sample collection when discharge occurring.

b) If discharge ceases for less than 30 days and discharge recommences, the initial monitoring schedule shall continue. If discharge ceases for greater than 30 days, monitoring shall revert as per item a)

c) Discharge to commence after initial sample results received and forwarded to MOECC.

Parameters: General Chemistry, total metals, volatile organic compounds (VOC), and semi-volatile organic compounds (sVOC) as specified in Table 3. Analytical testing to be conducted by external Canadian certified laboratory

Rationale: Provides a detailed chemical profile of the water prior to and during discharge periods for both pre- and post-treatment of the water. Parameters represent chemical

constituents that are accepted at the facility and as such may be present in the surface water system.

3.1.2.2 Toxicity Monitoring

Location: EQ Pond discharge

Frequency: As per the Monthly Discharge Chemical Monitoring Program

Parameters: Microtox for fresh water in accordance with Environment Canada test method and protocols

Rationale: Monitors the overall water quality toxicity with an approved program

3.1.2.3 Visual Observations

Location: EQ Pond

Frequency: As per the Monthly Discharge Chemical Monitoring Program

Parameters: Presence/ absence of fish in the EQ Pond through observation with food application at several locations around the EQ Pond perimeter

Rationale: Monitors whether fish are present in the pond and a general understanding of the overall health of the EQ Pond and water quality with regard to aquatic life

3.1.3 Off-Site Surface Water Monitoring

Location: STN6 (upstream of discharge) and STN6A (downstream of discharge). See Attachment A for monitoring locations.

Frequency: Two samples per year, one in the spring and one in the late summer/fall period. Samples to be collected when a discharge is occurring and on the same day as the monthly discharge samples are collected. The time period between the spring and late summer/fall sample should be a minimum of 80 days.

Parameters: General Chemistry, total metals, volatile organic compounds (VOC), and semi-volatile organic compounds (sVOC) as specified in Table 3. Analytical testing to be conducted by external Canadian certified laboratory

Rationale: Provides a detailed chemical profile of the water in a downstream drainage system prior to and after the discharge of water from the drainage ditch that serves the facility. Parameters are consistent with the discharge monitoring parameters.

3.2 Surface Water Characterization Program

The surface water characterization program noted in Condition 8 of the SW ECA relates to concerns expressed during the vertical expansion approval and the potential changes that may occur with the surface water management system due to changes in the landfill operations and methods. A key

concern is the potential for dust/operational impacts since the initial disposal cells (Cell 19 and 20) are in close proximity to the West Surface Water Pond, which is the main surface water storage pond prior to water treatment, and these cells will be filled in the first five years of the landfill expansion program.

Review of historic data associated with the Clean Harbors facility with regard to surface water and process water quality have indicated that metals are the dominate set of parameters that change as a result of operational changes or changes in disposal location. The VOC and sVOC parameters also indicate some differences, but these are sporadic and low level (below criteria).

As such, the surface water characterization program proposed has been incorporated within the surface water monitoring program by monitoring the East and West Surface Water Ponds prior to and during discharge periods for general chemistry, metals, VOCs, and sVOCs. These represent periods when water is present within the ponds, or in the case of pre-discharge, a period of long-term water storage. The monitoring for a period of five years after commencement of the landfill expansion will allow a database to be established that will provide a long-term database for the new surface water management set-up. Amendments to the surface water characterization program that is part of the surface water monitoring program will be handled through the annual monitoring program and any modifications would require the approval of the Regional Director.

3.3 Amendments to Surface Water Monitoring Program

Once a five year database of surface water monitoring post-commencement of the landfill expansion has been collected, Clean Harbors may assess the data and recommend changes to the surface water monitoring program. The assessment will be conducted as part of the Annual Report and specific amendments to the surface water program will be provided in the report recommendations section. Changes to the surface water monitoring program will require review by MOECC Regional staff and approval of the recommendations by the Regional Director.

Clean Harbors may collect additional surface water samples that relate to specific events or to collect additional information with regard to the management and operation of the surface water system. These additional events/ samples will only become part of the official monitoring program if recommended by Clean Harbors in the Annual Report and approved by the Regional Director.

3.4 Annual Reporting

Annual reporting shall continue to be conducted in accordance with Condition 15 of the Waste ECA.

4. Summary

A revised surface water monitoring program has been developed that addresses the surface water characterization concerns and adjusts the program to be proactive in data collection so that trends and changing conditions can be monitored to assess performance and make adjustments that are beneficial to the natural environment.

The revised program is presented on Tables 2 and 3.

Should you have any questions or comments with respect to the work program proposed, please do not hesitate to contact the undersigned.

Sincerely,

GHD

A handwritten signature in blue ink, appearing to read "James R. Yardley". The signature is fluid and cursive, with a long horizontal stroke extending from the end of the name.

James R. Yardley

JRY/mg/2

cc: Mike Parker, Clean Harbors Canada

**Current Surface Water Monitoring Program
Lambton Facility, Clean Harbors**

Monitoring Location	Parameter	Current Surface Water Sampling Program		
		Daily During Discharge	Spring	Fall
EQ Pond Discharge	pH, conductivity, TSS, Total phenols, chloride, sulphate, solvent extractables, COD Microtox Acute Toxicity - 96 hr - Rainbow Trout Acute Toxicity - 48 hr - Daphnia Magna Chronic Toxicity - 7 day - Flathead Minnows Chronic Toxicity - 7 day - Ceriodaphnia Dubia Free cyanide, nitrite, nitrate, TKN, Metals	<ul style="list-style-type: none"> ■ ■ 	<ul style="list-style-type: none"> ■ consecutive day samples ■ consecutive day samples ■ ■ ■ consecutive day samples ■ consecutive day samples 	<ul style="list-style-type: none"> ■ consecutive day samples ■ consecutive day samples ■ consecutive day samples ■ consecutive day samples
EQ Pond	Benthic Invertebrates Fish Presence Dissolved Oxygen Profile Secchi depth profile		<ul style="list-style-type: none"> ■ ■ ■ ■ 	
Effluent from SWTP	General Chemistry (1) Metals sVOCs Pesticides		<ul style="list-style-type: none"> ■ ■ ■ ■ 	<ul style="list-style-type: none"> ■ ■ ■ ■
Influent to SWTP	General Chemistry (1) Metals sVOCs Pesticides		<ul style="list-style-type: none"> ■ ■ ■ ■ 	<ul style="list-style-type: none"> ■ ■ ■ ■
STN6 (off-site background)	General Chemistry (1) Metals		<ul style="list-style-type: none"> ■ ■ 	<ul style="list-style-type: none"> ■ ■
STN6A (off-site downstream)	General Chemistry (1) Metals		<ul style="list-style-type: none"> ■ ■ 	<ul style="list-style-type: none"> ■ ■

Notes:

- (1) General Chemistry includes pH, conductivity, free cyanide, total ammonia, COD, phenols, total phosphorus, TSS, chloride, dissolved sulphate
- (2) Consecutive day samples means one sample/day for 3 consecutive days

**Proposed Surface Water Monitoring Program
Lambton Facility, Clean Harbors**

Monitoring Location	Parameter (1)	Proposed Surface Water Sampling Program		
		Daily Discharge	Monthly Discharge	Spring and late Summer/Fall
EQ Pond Discharge	pH, conductivity, TSS, Total phenols, chloride, solvent extractables Microtox General Chemistry Metals VOCs sVOCs	■	■ (2) ■ (2) ■ (2) ■ (2) ■ (2)	
EQ Pond	Fish Presence		■	
West Storm Water Pond	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
East Storm Water Pond	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
STN6 (off-site background)	General Chemistry Metals			■ (3) ■ (3)
STN6A (off-site downstream)	General Chemistry Metals			■ (3) ■ (3)

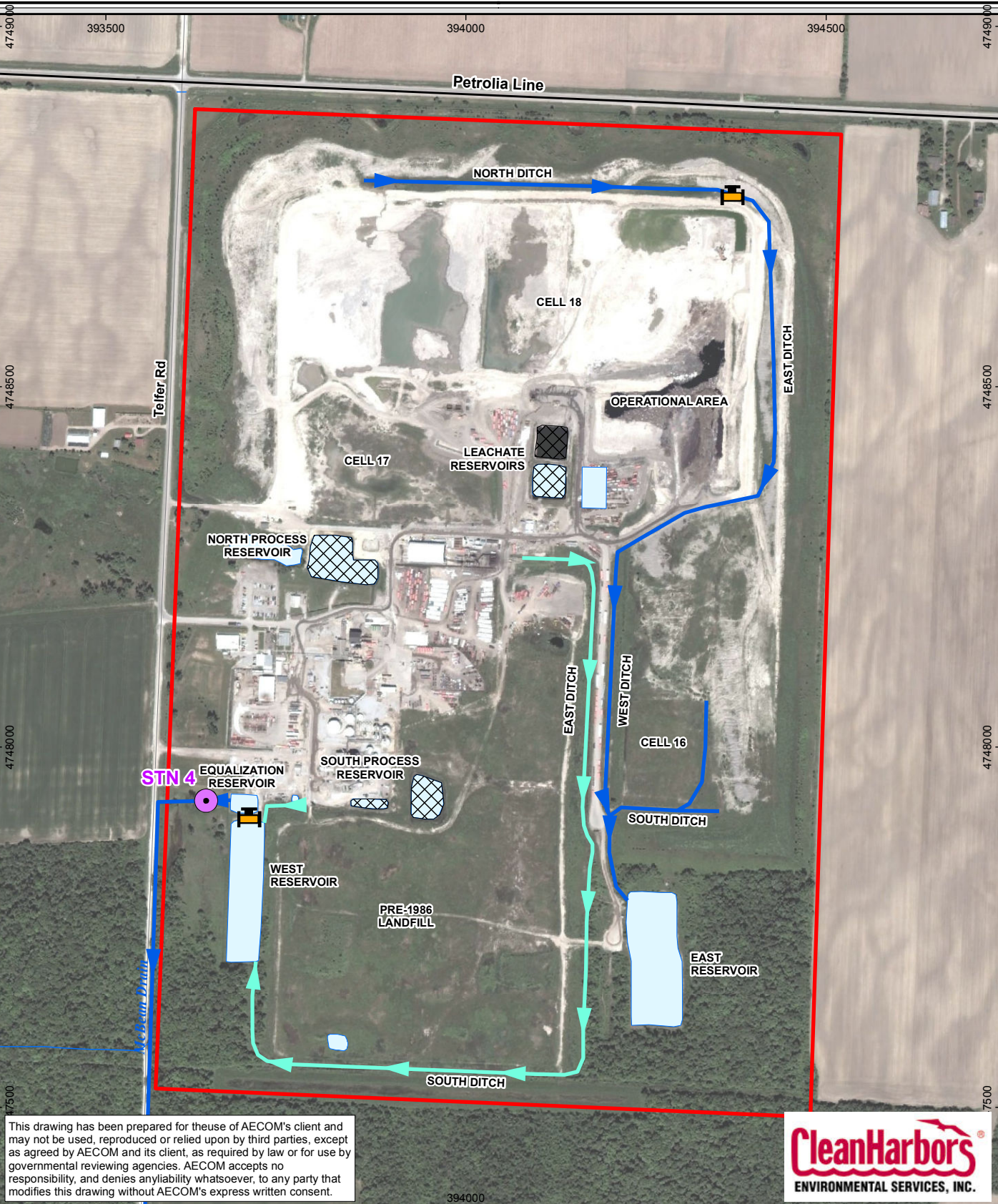
Notes:

- (1) General Chemistry, metals, VOC, and sVOC parameters as per detailed list provided in Table 3
- (2) Prior to discharge sample would be collected from the EQ Pond
- (3) Samples to be collected during discharge from Site and on same day as Monthly Discharge samples

**Surface Water Monitoring Parameters
Lambton Facility, Clean Harbors**

Parameter	Analytes
General Chemistry Parameters	Alkalinity (total as CaCO ₃), Ammonia-N, Bromide (dissolved), Chemical Oxygen Demand (COD), Chloride (dissolved), Conductivity (umhos/cm), Cyanide (total), Dissolved Organic Carbon (DOC), Fluoride, Hardness, Nitrate (as N), Nitrite (as N), pH (field), pH (lab), Phenolics (total), Phosphorus (total), Sulfate (dissolved), Temperature (field), Total Dissolved Solids (TDS), Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS), Un-ionized Ammonia
Metals (Total)	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium (Hexavalent), Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc
Volatile Organic Compounds (VOC)	1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dibromoethane (Ethylene dibromide), 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Butanone (Methyl ethyl ketone), 4-Methyl-2-pentanone (Methyl isobutyl ketone), Acetone, Benzene, Bromodichloromethane, Bromoform, Bromomethane (Methyl bromide), Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform (Trichloromethane), cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane (CFC-12), Ethylbenzene, Hexane, m&p-Xylenes, Methyl tert butyl ether (MTBE), Methylene chloride, o-Xylene, Styrene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane (CFC-11), Vinyl Chloride, Xylenes (total)
Semi-Volatile Organic Compounds (sVOC)	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1-Methylnaphthalene, 2,3,4,5-Tetrachlorophenol/2,3,4,6-Tetrachlorophenol, 2,3,6-Trichlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chlorophenol, 2-Methylnaphthalene, 3,3'-Dichlorobenzidine, 4-Chloroaniline, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene/Benzo(j)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2-Chloroethyl)ether, bis(ethylhexy)phthalate (DEHP), Chrysene, Dibenz(a,h)anthracene, Diethyl phthalate, Dimethyl phthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorobutadiene, Indeno(1,2,3-cd)pyrene, Naphthalene, Pentachlorophenol, Perylene, Phenanthrene, Pyrene

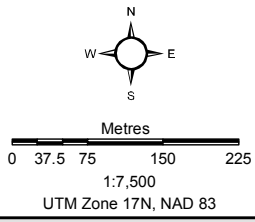
Attachment A



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Basemapping from Ontario Ministry of Natural Resources Orthophotography:



Legend

- | | |
|---------------------------------|----------------------------------------------|
| Water Quality Station | Non-Impacted/Treated Surface Water Reservoir |
| Pre-1986 Landfill Ditch System | Process Reservoir |
| Post-1986 Landfill Ditch System | Permanent Stream |
| Pumping Equipment | |

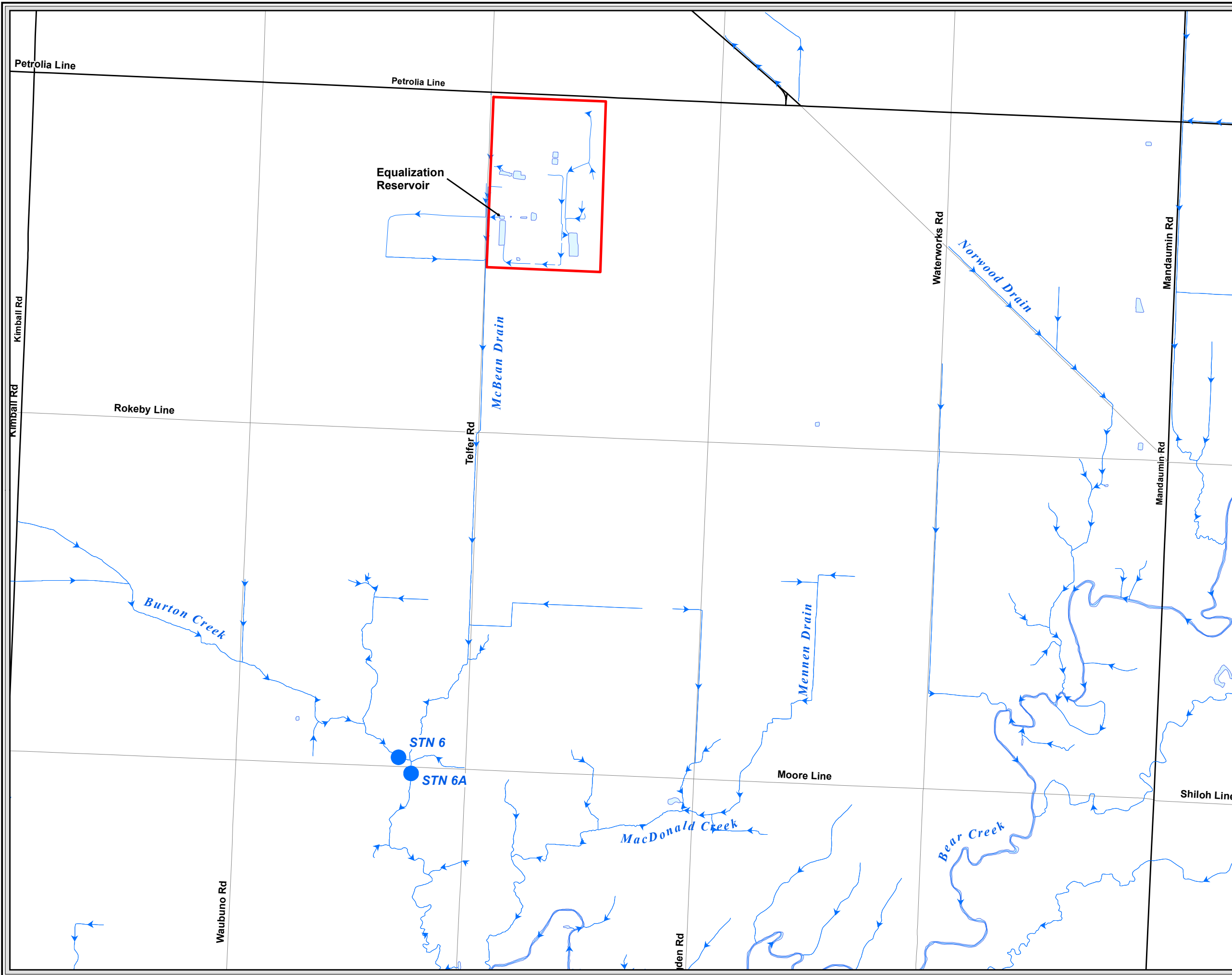
Clean Harbors, Lambton, Ontario

Surface Water Management System

October 2014
60316888



Figure 3



Legend

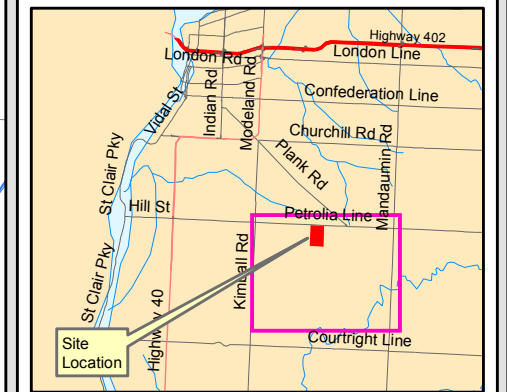
- Supplementary Off-Site Surface Water Monitoring Locations
- Waste Facility

Roads

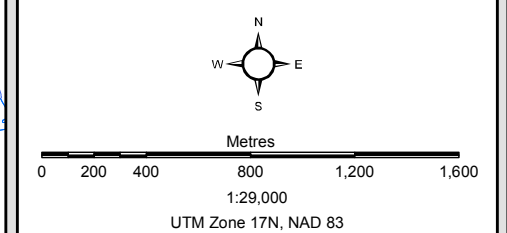
- Major Road
- Local Road

Water Features

- Intermittent Stream
- Permanent Stream
- Waterbody



Basemapping from Ontario Ministry of Natural Resources Orthophotography:



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CleanHarbors
Clean Harbors Canada, Inc.

Supplementary Off-Site Surface Water Monitoring Locations

October 2014
60316888

AECOM

Figure 4

Appendix I.2 Analytical Data Collected During Effluent Discharge



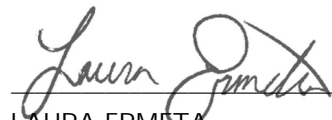
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 01-APR-16
Report Date: 08-APR-16 14:31 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1750708
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers: 14-501902
Legal Site Desc:


LAURA ERMETA
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1750708-1 EQ POND							
Sampled By: CLIENT on 31-MAR-16 @ 09:00							
Matrix: WATER							
Physical Tests							
Conductivity	713		3.0	umhos/cm		03-APR-16	R3429909
Hardness (as CaCO3)	257		10	mg/L		07-APR-16	
pH	8.14		0.10	pH units		03-APR-16	R3429825
Total Suspended Solids	10.4		2.0	mg/L	05-APR-16	06-APR-16	R3433236
Total Dissolved Solids	463	DLDS	20	mg/L		04-APR-16	R3430062
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	119		10	mg/L		07-APR-16	R3434561
Ammonia, Total (as N)	0.149		0.020	mg/L		01-APR-16	R3429805
Bromide (Br)	0.35		0.10	mg/L		04-APR-16	R3430320
Chloride (Cl)	76.3		0.50	mg/L		04-APR-16	R3430320
Fluoride (F)	0.612		0.020	mg/L		04-APR-16	R3430320
Nitrate (as N)	0.114		0.020	mg/L		04-APR-16	R3430320
Nitrite (as N)	<0.010		0.010	mg/L		04-APR-16	R3430320
Total Kjeldahl Nitrogen	0.75		0.15	mg/L	07-APR-16	07-APR-16	R3434497
Total Phosphorus	0.0278		0.0030	mg/L	06-APR-16	07-APR-16	R3433853
Sulfate (SO4)	122		0.30	mg/L		04-APR-16	R3430320
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		01-APR-16	R3429622
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.5		1.0	mg/L		04-APR-16	R3430541
Total Metals							
Aluminum (Al)-Total	0.123		0.010	mg/L	03-APR-16	06-APR-16	R3433155
Antimony (Sb)-Total	0.00042		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Arsenic (As)-Total	0.00125		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Barium (Ba)-Total	0.0433		0.0020	mg/L	03-APR-16	06-APR-16	R3433155
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-APR-16	06-APR-16	R3433155
Boron (B)-Total	0.291		0.010	mg/L	03-APR-16	06-APR-16	R3433155
Cadmium (Cd)-Total	0.000025		0.000010	mg/L	03-APR-16	06-APR-16	R3433155
Calcium (Ca)-Total	67.0		0.50	mg/L	03-APR-16	06-APR-16	R3433155
Cobalt (Co)-Total	0.00019		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Copper (Cu)-Total	<0.0010		0.0010	mg/L	03-APR-16	06-APR-16	R3433155
Iron (Fe)-Total	0.162		0.050	mg/L	03-APR-16	06-APR-16	R3433155
Lead (Pb)-Total	0.00020		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Magnesium (Mg)-Total	21.9		0.050	mg/L	03-APR-16	06-APR-16	R3433155
Manganese (Mn)-Total	0.0395		0.00050	mg/L	03-APR-16	06-APR-16	R3433155
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-APR-16	R3429644
Molybdenum (Mo)-Total	0.0196		0.00050	mg/L	03-APR-16	06-APR-16	R3433155
Nickel (Ni)-Total	0.0035		0.0010	mg/L	03-APR-16	06-APR-16	R3433155
Potassium (K)-Total	4.27		0.050	mg/L	03-APR-16	06-APR-16	R3433155
Selenium (Se)-Total	0.000977		0.000050	mg/L	03-APR-16	06-APR-16	R3433155
Silicon (Si)-Total	0.814		0.050	mg/L	03-APR-16	06-APR-16	R3433155

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1750708-1 EQ POND							
Sampled By: CLIENT on 31-MAR-16 @ 09:00							
Matrix: WATER							
Total Metals							
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-APR-16	06-APR-16	R3433155
Sodium (Na)-Total	43.4		0.50	mg/L	03-APR-16	06-APR-16	R3433155
Strontium (Sr)-Total	0.494		0.0010	mg/L	03-APR-16	06-APR-16	R3433155
Thallium (Tl)-Total	0.000019		0.000010	mg/L	03-APR-16	06-APR-16	R3433155
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-APR-16	06-APR-16	R3433155
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-APR-16	06-APR-16	R3433155
Zinc (Zn)-Total	0.0033		0.0030	mg/L	03-APR-16	06-APR-16	R3433155
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		01-APR-16	R3428781
Aggregate Organics							
COD	19		10	mg/L		06-APR-16	R3432753
Phenols (4AAP)	<0.0010		0.0010	mg/L		02-APR-16	R3429846
Volatile Organic Compounds							
Acetone	22		20	ug/L		04-APR-16	R3429497
Benzene	<0.50		0.50	ug/L		04-APR-16	R3429497
Bromodichloromethane	<1.0		1.0	ug/L		04-APR-16	R3429497
Bromoform	<1.0		1.0	ug/L		04-APR-16	R3429497
Bromomethane	<0.50		0.50	ug/L		04-APR-16	R3429497
Carbon tetrachloride	<0.50		0.50	ug/L		04-APR-16	R3429497
Chlorobenzene	<0.50		0.50	ug/L		04-APR-16	R3429497
Dibromochloromethane	<1.0		1.0	ug/L		04-APR-16	R3429497
Chloroethane	<1.0		1.0	ug/L		04-APR-16	R3429497
Chloroform	<1.0		1.0	ug/L		04-APR-16	R3429497
1,2-Dibromoethane	<0.20		0.20	ug/L		04-APR-16	R3429497
1,2-Dichlorobenzene	<0.50		0.50	ug/L		04-APR-16	R3429497
1,3-Dichlorobenzene	<0.50		0.50	ug/L		04-APR-16	R3429497
1,4-Dichlorobenzene	<0.50		0.50	ug/L		04-APR-16	R3429497
Dichlorodifluoromethane	<1.0		1.0	ug/L		04-APR-16	R3429497
1,1-Dichloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
1,2-Dichloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
1,1-Dichloroethylene	<0.50		0.50	ug/L		04-APR-16	R3429497
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-APR-16	R3429497
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-APR-16	R3429497
Dichloromethane	<2.0		2.0	ug/L		04-APR-16	R3429497
1,2-Dichloropropane	<0.50		0.50	ug/L		04-APR-16	R3429497
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		04-APR-16	R3429497
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		04-APR-16	R3429497
Ethylbenzene	<0.50		0.50	ug/L		04-APR-16	R3429497
n-Hexane	<0.50		0.50	ug/L		04-APR-16	R3429497
Methyl Ethyl Ketone	<20		20	ug/L		04-APR-16	R3429497
Methyl Isobutyl Ketone	<20		20	ug/L		04-APR-16	R3429497
MTBE	<0.50		0.50	ug/L		04-APR-16	R3429497

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1750708-1 EQ POND							
Sampled By: CLIENT on 31-MAR-16 @ 09:00							
Matrix: WATER							
Volatile Organic Compounds							
Styrene	<0.50		0.50	ug/L		04-APR-16	R3429497
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
Tetrachloroethylene	<0.50		0.50	ug/L		04-APR-16	R3429497
Toluene	<0.50		0.50	ug/L		04-APR-16	R3429497
1,1,1-Trichloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
1,1,2-Trichloroethane	<0.50		0.50	ug/L		04-APR-16	R3429497
Trichloroethylene	<0.50		0.50	ug/L		04-APR-16	R3429497
Trichlorofluoromethane	<1.0		1.0	ug/L		04-APR-16	R3429497
Vinyl chloride	<0.50		0.50	ug/L		04-APR-16	R3429497
o-Xylene	<0.50		0.50	ug/L		04-APR-16	R3429497
m+p-Xylenes	<1.0		1.0	ug/L		04-APR-16	R3429497
Xylenes (Total)	<1.1		1.1	ug/L		04-APR-16	
Surrogate: 4-Bromofluorobenzene	94.6		70-130	%		04-APR-16	R3429497
Surrogate: 1,4-Difluorobenzene	103.8		70-130	%		04-APR-16	R3429497
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
Surrogate: 2,4,6-Tribromophenol	77.7		40-150	%	05-APR-16	07-APR-16	R3433952
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Acenaphthylene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Anthracene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Benzo(a)anthracene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Benzo(a)pyrene	<0.050		0.050	ug/L	05-APR-16	07-APR-16	R3433952
Benzo(b)fluoranthene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Benzo(ghi)perylene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Benzo(k)fluoranthene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
4-Chloroaniline	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
2-Chlorophenol	<0.30		0.30	ug/L	05-APR-16	07-APR-16	R3433952
Chrysene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
1,2-Dichlorobenzene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
1,3-Dichlorobenzene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
1,4-Dichlorobenzene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
2,4-Dichlorophenol	<0.30		0.30	ug/L	05-APR-16	07-APR-16	R3433952
Diethylphthalate	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Dimethylphthalate	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
2,4-Dimethylphenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
2,4-Dinitrophenol	<1.0		1.0	ug/L	05-APR-16	07-APR-16	R3433952

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1750708-1 EQ POND							
Sampled By: CLIENT on 31-MAR-16 @ 09:00							
Matrix: WATER							
Semi-Volatile Organics							
2,4-Dinitrotoluene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
2,6-Dinitrotoluene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	05-APR-16	07-APR-16	R3433952
Fluoranthene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Fluorene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Hexachlorobenzene	<0.040		0.040	ug/L	05-APR-16	07-APR-16	R3433952
Hexachlorobutadiene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
1-Methylnaphthalene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
2-Methylnaphthalene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
Naphthalene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Pentachlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
Perylene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Phenanthrene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
Pyrene	<0.20		0.20	ug/L	05-APR-16	07-APR-16	R3433952
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	05-APR-16	07-APR-16	R3433952
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	05-APR-16	07-APR-16	R3433952
Surrogate: 2-Fluorobiphenyl	90.6		40-130	%	05-APR-16	07-APR-16	R3433952
Surrogate: Nitrobenzene d5	96.2		50-130	%	05-APR-16	07-APR-16	R3433952
Surrogate: p-Terphenyl d14	109.1		40-130	%	05-APR-16	07-APR-16	R3433952

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Total Suspended Solids	DLHC	L1750708-1
Matrix Spike	Phenols (4AAP)	K	L1750708-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L1750708-1
Matrix Spike	Barium (Ba)-Total	MS-B	L1750708-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L1750708-1
Matrix Spike	Iron (Fe)-Total	MS-B	L1750708-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1750708-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L1750708-1
Matrix Spike	Potassium (K)-Total	MS-B	L1750708-1
Matrix Spike	Silicon (Si)-Total	MS-B	L1750708-1
Matrix Spike	Sodium (Na)-Total	MS-B	L1750708-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L1750708-1

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
K	Matrix Spike recovery outside ALS DQO due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD.	SW846 8270
625-WT	Water	EPA 8270 Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.	SW846 8270
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
C-DIS-ORG-WT	Water	Dissolved Organic Carbon Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.	APHA 5310 B-INSTRUMENTAL
CL-IC-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
CN-TOT-WT	Water	Cyanide, Total Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.	APHA 4500CN C E-STRONG ACID DIST COLORIM
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COD-WT	Water	Chemical Oxygen Demand This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.	APHA 5220 D
CR-CR6-IC-WT	Water	Chromium +6 This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.	EPA 7199
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
EC-WT	Water	Conductivity Water samples can be measured directly by immersing the conductivity cell into the sample.	APHA 2510 B

Reference Information

F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-LOW-COL-WT	Water	Total P in Water by Colour	APHA 4500-P B E
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-T-LOW-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.			
TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-N
Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.			
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260
Aqueous samples are analyzed by headspace-GC/MS.			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

Chain of Custody Numbers:

14-501902

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1750708

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-ACID-EXTRA-WT		Water						
Batch	R3433952							
WG2286200-2	LCS							
2,3,6-Trichlorophenol			80.1		%		50-130	07-APR-16
WG2286200-3	LCSD	WG2286200-2						
2,3,6-Trichlorophenol		80.1	83.8		%	4.5	50	07-APR-16
WG2286200-1	MB							
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	07-APR-16
Surrogate: 2,4,6-Tribromophenol			76.3		%		40-150	07-APR-16
625-WT		Water						
Batch	R3433952							
WG2286200-2	LCS							
1-Methylnaphthalene			82.5		%		50-140	07-APR-16
1,2-Dichlorobenzene			63.3		%		40-130	07-APR-16
1,2,4-Trichlorobenzene			62.4		%		40-130	07-APR-16
1,3-Dichlorobenzene			58.1		%		50-140	07-APR-16
1,4-Dichlorobenzene			60.0		%		40-130	07-APR-16
2-Chlorophenol			79.3		%		50-140	07-APR-16
2-Methylnaphthalene			76.7		%		50-140	07-APR-16
2,3,4,5-Tetrachlorophenol			81.2		%		50-140	07-APR-16
2,3,4,6-Tetrachlorophenol			80.9		%		50-140	07-APR-16
2,4-Dichlorophenol			85.1		%		50-140	07-APR-16
2,4-Dimethylphenol			53.5		%		50-140	07-APR-16
2,4-Dinitrophenol			50.0		%		40-140	07-APR-16
2,4-Dinitrotoluene			95.2		%		50-140	07-APR-16
2,4,5-Trichlorophenol			85.2		%		50-140	07-APR-16
2,4,6-Trichlorophenol			77.9		%		50-140	07-APR-16
2,6-Dinitrotoluene			100.0		%		50-140	07-APR-16
3,3'-Dichlorobenzidine			95.3		%		50-140	07-APR-16
4-Chloroaniline			78.1		%		30-140	07-APR-16
Acenaphthene			96.9		%		50-140	07-APR-16
Acenaphthylene			94.3		%		50-140	07-APR-16
Anthracene			97.9		%		50-140	07-APR-16
Benzo(a)anthracene			101.6		%		50-140	07-APR-16
Benzo(a)pyrene			110.8		%		60-130	07-APR-16
Benzo(b)fluoranthene			110.5		%		50-140	07-APR-16
Benzo(ghi)perylene			98.3		%		50-140	07-APR-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3433952							
WG2286200-2 LCS								
Benzo(k)fluoranthene			109.7		%		50-140	07-APR-16
Bis(2-chloroethyl)ether			91.9		%		50-140	07-APR-16
Bis(2-ethylhexyl)phthalate			112.5		%		50-140	07-APR-16
Chrysene			107.9		%		50-140	07-APR-16
Dibenzo(a,h)anthracene			100.9		%		50-140	07-APR-16
Diethylphthalate			93.8		%		50-140	07-APR-16
Dimethylphthalate			95.4		%		50-140	07-APR-16
Fluoranthene			101.5		%		50-140	07-APR-16
Fluorene			90.0		%		50-140	07-APR-16
Hexachlorobenzene			90.3		%		40-130	07-APR-16
Hexachlorobutadiene			51.5		%		40-130	07-APR-16
Indeno(1,2,3-cd)pyrene			99.0		%		50-140	07-APR-16
Naphthalene			80.7		%		50-140	07-APR-16
Pentachlorophenol			69.9		%		50-140	07-APR-16
Perylene			108.8		%		50-140	07-APR-16
Phenanthrene			94.4		%		50-140	07-APR-16
Pyrene			101.3		%		50-140	07-APR-16
WG2286200-3 LCSD		WG2286200-2						
1-Methylnaphthalene		82.5	84.7		%	2.7	50	07-APR-16
1,2-Dichlorobenzene		63.3	70.3		%	10	50	07-APR-16
1,2,4-Trichlorobenzene		62.4	69.5		%	11	50	07-APR-16
1,3-Dichlorobenzene		58.1	64.9		%	11	50	07-APR-16
1,4-Dichlorobenzene		60.0	66.5		%	10	50	07-APR-16
2-Chlorophenol		79.3	77.1		%	2.9	50	07-APR-16
2-Methylnaphthalene		76.7	78.2		%	1.9	50	07-APR-16
2,3,4,5-Tetrachlorophenol		81.2	83.8		%	3.2	50	07-APR-16
2,3,4,6-Tetrachlorophenol		80.9	83.4		%	3.0	50	07-APR-16
2,4-Dichlorophenol		85.1	84.9		%	0.2	50	07-APR-16
2,4-Dimethylphenol		53.5	44.8		%	18	50	07-APR-16
2,4-Dinitrophenol		50.0	63.0		%	23	50	07-APR-16
2,4-Dinitrotoluene		95.2	96.8		%	1.6	50	07-APR-16
2,4,5-Trichlorophenol		85.2	86.3		%	1.3	50	07-APR-16
2,4,6-Trichlorophenol		77.9	81.5		%	4.5	50	07-APR-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3433952							
WG2286200-3	LCSD	WG2286200-2						
2,6-Dinitrotoluene		100.0	100.1		%	0.1	50	07-APR-16
3,3'-Dichlorobenzidine		95.3	90.4		%	5.2	50	07-APR-16
4-Chloroaniline		78.1	70.3		%	11	50	07-APR-16
Acenaphthene		96.9	96.8		%	0.1	50	07-APR-16
Acenaphthylene		94.3	94.4		%	0.1	50	07-APR-16
Anthracene		97.9	96.6		%	1.3	50	07-APR-16
Benzo(a)anthracene		101.6	100.8		%	0.8	50	07-APR-16
Benzo(a)pyrene		110.8	109.5		%	1.1	50	07-APR-16
Benzo(b)fluoranthene		110.5	109.5		%	0.9	50	07-APR-16
Benzo(ghi)perylene		98.3	99.4		%	1.1	50	07-APR-16
Benzo(k)fluoranthene		109.7	105.6		%	3.8	50	07-APR-16
Bis(2-chloroethyl)ether		91.9	90.9		%	1.2	50	07-APR-16
Bis(2-ethylhexyl)phthalate		112.5	108.5		%	3.6	50	07-APR-16
Chrysene		107.9	106.6		%	1.2	50	07-APR-16
Dibenzo(a,h)anthracene		100.9	102.1		%	1.1	50	07-APR-16
Diethylphthalate		93.8	92.2		%	1.8	50	07-APR-16
Dimethylphthalate		95.4	94.7		%	0.7	50	07-APR-16
Fluoranthene		101.5	97.2		%	4.3	50	07-APR-16
Fluorene		90.0	89.8		%	0.2	50	07-APR-16
Hexachlorobenzene		90.3	88.0		%	2.6	50	07-APR-16
Hexachlorobutadiene		51.5	57.8		%	12	50	07-APR-16
Indeno(1,2,3-cd)pyrene		99.0	101.0		%	2.0	50	07-APR-16
Naphthalene		80.7	86.9		%	7.4	50	07-APR-16
Pentachlorophenol		69.9	71.5		%	2.3	50	07-APR-16
Perylene		108.8	106.4		%	2.2	50	07-APR-16
Phenanthrene		94.4	93.7		%	0.8	50	07-APR-16
Pyrene		101.3	97.8		%	3.5	50	07-APR-16
WG2286200-1	MB							
1-Methylnaphthalene			<0.40		ug/L		0.4	07-APR-16
1,2-Dichlorobenzene			<0.40		ug/L		0.4	07-APR-16
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	07-APR-16
1,3-Dichlorobenzene			<0.40		ug/L		0.4	07-APR-16
1,4-Dichlorobenzene			<0.40		ug/L		0.4	07-APR-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3433952							
WG2286200-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	07-APR-16
2-Methylnaphthalene			<0.40		ug/L		0.4	07-APR-16
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	07-APR-16
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	07-APR-16
2,4-Dichlorophenol			<0.30		ug/L		0.3	07-APR-16
2,4-Dimethylphenol			<0.50		ug/L		0.5	07-APR-16
2,4-Dinitrophenol			<1.0		ug/L		1	07-APR-16
2,4-Dinitrotoluene			<0.40		ug/L		0.4	07-APR-16
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	07-APR-16
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	07-APR-16
2,6-Dinitrotoluene			<0.40		ug/L		0.4	07-APR-16
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	07-APR-16
4-Chloroaniline			<0.40		ug/L		0.4	07-APR-16
Acenaphthene			<0.20		ug/L		0.2	07-APR-16
Acenaphthylene			<0.20		ug/L		0.2	07-APR-16
Anthracene			<0.20		ug/L		0.2	07-APR-16
Benzo(a)anthracene			<0.20		ug/L		0.2	07-APR-16
Benzo(a)pyrene			<0.050		ug/L		0.05	07-APR-16
Benzo(b)fluoranthene			<0.20		ug/L		0.2	07-APR-16
Benzo(ghi)perylene			<0.20		ug/L		0.2	07-APR-16
Benzo(k)fluoranthene			<0.20		ug/L		0.2	07-APR-16
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	07-APR-16
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	07-APR-16
Chrysene			<0.20		ug/L		0.2	07-APR-16
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	07-APR-16
Diethylphthalate			<0.20		ug/L		0.2	07-APR-16
Dimethylphthalate			<0.20		ug/L		0.2	07-APR-16
Fluoranthene			<0.20		ug/L		0.2	07-APR-16
Fluorene			<0.20		ug/L		0.2	07-APR-16
Hexachlorobenzene			<0.040		ug/L		0.04	07-APR-16
Hexachlorobutadiene			<0.20		ug/L		0.2	07-APR-16
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	07-APR-16
Naphthalene			<0.20		ug/L		0.2	07-APR-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT Water								
Batch R3433952								
WG2286200-1 MB								
	Pentachlorophenol		<0.50		ug/L		0.5	07-APR-16
	Perylene		<0.20		ug/L		0.2	07-APR-16
	Phenanthrene		<0.20		ug/L		0.2	07-APR-16
	Pyrene		<0.20		ug/L		0.2	07-APR-16
	Surrogate: 2-Fluorobiphenyl		92.4		%		40-130	07-APR-16
	Surrogate: Nitrobenzene d5		100.5		%		50-130	07-APR-16
	Surrogate: p-Terphenyl d14		114.4		%		40-130	07-APR-16
ALK-WT Water								
Batch R3434561								
WG2287836-3 CRM WT-ALK-CRM								
	Alkalinity, Total (as CaCO3)		94.6		%		80-120	07-APR-16
WG2287836-4 DUP L1752373-6								
	Alkalinity, Total (as CaCO3)	311	306		mg/L	1.7	20	07-APR-16
WG2287836-2 LCS								
	Alkalinity, Total (as CaCO3)		102.3		%		85-115	07-APR-16
WG2287836-1 MB								
	Alkalinity, Total (as CaCO3)		<10		mg/L		10	07-APR-16
BR-IC-N-WT Water								
Batch R3430320								
WG2285343-19 DUP WG2285343-20								
	Bromide (Br)	<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-APR-16
WG2285343-17 LCS								
	Bromide (Br)		98.8		%		85-115	04-APR-16
WG2285343-16 MB								
	Bromide (Br)		<0.10		mg/L		0.1	04-APR-16
WG2285343-18 MS WG2285343-20								
	Bromide (Br)		107.2		%		75-125	04-APR-16
C-DIS-ORG-WT Water								
Batch R3430541								
WG2285829-3 DUP L1750708-1								
	Dissolved Organic Carbon	6.5	5.3		mg/L	20	20	04-APR-16
WG2285829-2 LCS								
	Dissolved Organic Carbon		103.7		%		80-120	04-APR-16
WG2285829-1 MB								
	Dissolved Organic Carbon		<1.0		mg/L		1	04-APR-16
WG2285829-4 MS L1750708-1								



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 651 COLBY DRIVE
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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
CR-CR6-IC-WT		Water							
Batch	R3428781								
WG2284519-10	MS	WG2284519-8	92.7		%		70-130	01-APR-16	
			Chromium, Hexavalent						
EC-WT		Water							
Batch	R3429909								
WG2285149-8	DUP	WG2285149-7	723		umhos/cm	0.0	10	03-APR-16	
			Conductivity						
WG2285149-6	LCS		98.7		%		90-110	03-APR-16	
			Conductivity						
WG2285149-5	MB		<3.0		umhos/cm		3	03-APR-16	
			Conductivity						
F-IC-N-WT		Water							
Batch	R3430320								
WG2285343-19	DUP	WG2285343-20	0.482	0.474	mg/L	1.6	20	04-APR-16	
			Fluoride (F)						
WG2285343-17	LCS		101.8		%		90-110	04-APR-16	
			Fluoride (F)						
WG2285343-16	MB		<0.020		mg/L		0.02	04-APR-16	
			Fluoride (F)						
WG2285343-18	MS	WG2285343-20	100.7		%		75-125	04-APR-16	
			Fluoride (F)						
HG-T-CVAA-WT		Water							
Batch	R3429644								
WG2285308-3	DUP	L1750844-1	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-APR-16
			Mercury (Hg)-Total						
WG2285308-2	LCS		95.1		%		80-120	04-APR-16	
			Mercury (Hg)-Total						
WG2285308-1	MB		<0.000010		mg/L		0.00001	04-APR-16	
			Mercury (Hg)-Total						
WG2285308-4	MS	L1750844-2	92.5		%		70-130	04-APR-16	
			Mercury (Hg)-Total						
MET-T-MS-WT		Water							
Batch	R3433155								
WG2285227-4	DUP	WG2285227-3	0.777	0.770	mg/L	1.0	20	06-APR-16	
			Aluminum (Al)-Total						
			0.00033	0.00033	mg/L	0.9	20	06-APR-16	
			Antimony (Sb)-Total						
			0.00182	0.00173	mg/L	4.9	20	06-APR-16	
			Arsenic (As)-Total						



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 651 COLBY DRIVE
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3433155							
WG2285227-4	DUP	WG2285227-3						
Barium (Ba)-Total		0.0526	0.0517		mg/L	1.6	20	06-APR-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-APR-16
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-APR-16
Boron (B)-Total		0.015	0.014		mg/L	2.5	20	06-APR-16
Cadmium (Cd)-Total		0.000026	0.000026		mg/L	0.8	20	06-APR-16
Calcium (Ca)-Total		148	145		mg/L	1.7	20	06-APR-16
Cobalt (Co)-Total		0.00096	0.00097		mg/L	0.7	20	06-APR-16
Copper (Cu)-Total		0.0057	0.0058		mg/L	2.2	20	06-APR-16
Iron (Fe)-Total		1.12	1.11		mg/L	0.2	20	06-APR-16
Lead (Pb)-Total		0.00061	0.00061		mg/L	0.2	20	06-APR-16
Magnesium (Mg)-Total		36.4	35.9		mg/L	1.3	20	06-APR-16
Manganese (Mn)-Total		0.666	0.651		mg/L	2.2	20	06-APR-16
Molybdenum (Mo)-Total		0.000531	0.000542		mg/L	2.1	20	06-APR-16
Nickel (Ni)-Total		0.00458	0.00445		mg/L	3.0	20	06-APR-16
Potassium (K)-Total		13.1	12.9		mg/L	1.5	20	06-APR-16
Selenium (Se)-Total		0.000188	0.000181		mg/L	3.4	20	06-APR-16
Silicon (Si)-Total		9.83	9.76		mg/L	0.7	20	06-APR-16
Silver (Ag)-Total		0.000153	0.000185		mg/L	19	20	06-APR-16
Sodium (Na)-Total		12.8	12.5		mg/L	2.3	20	06-APR-16
Strontium (Sr)-Total		0.395	0.389		mg/L	1.6	20	06-APR-16
Thallium (Tl)-Total		<0.000010	0.000012	RPD-NA	mg/L	N/A	20	06-APR-16
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-APR-16
Vanadium (V)-Total		0.00304	0.00296		mg/L	2.8	20	06-APR-16
Zinc (Zn)-Total		0.0110	0.0103		mg/L	6.5	20	06-APR-16
WG2285227-2	LCS							
Aluminum (Al)-Total			104.6		%		80-120	06-APR-16
Antimony (Sb)-Total			102.3		%		80-120	06-APR-16
Arsenic (As)-Total			103.2		%		80-120	06-APR-16
Barium (Ba)-Total			100.7		%		80-120	06-APR-16
Beryllium (Be)-Total			108.3		%		80-120	06-APR-16
Bismuth (Bi)-Total			104.3		%		80-120	06-APR-16
Boron (B)-Total			101.0		%		80-120	06-APR-16
Cadmium (Cd)-Total			98.6		%		80-120	06-APR-16



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3433155							
WG2285227-2	LCS							
Calcium (Ca)-Total			100.1		%		80-120	06-APR-16
Cobalt (Co)-Total			100.1		%		80-120	06-APR-16
Copper (Cu)-Total			99.1		%		80-120	06-APR-16
Iron (Fe)-Total			95.5		%		80-120	06-APR-16
Lead (Pb)-Total			106.9		%		80-120	06-APR-16
Magnesium (Mg)-Total			98.5		%		80-120	06-APR-16
Manganese (Mn)-Total			104.9		%		80-120	06-APR-16
Molybdenum (Mo)-Total			103.4		%		80-120	06-APR-16
Nickel (Ni)-Total			98.8		%		80-120	06-APR-16
Potassium (K)-Total			101.7		%		80-120	06-APR-16
Selenium (Se)-Total			95.3		%		80-120	06-APR-16
Silicon (Si)-Total			110.4		%		80-120	06-APR-16
Silver (Ag)-Total			105.9		%		80-120	06-APR-16
Sodium (Na)-Total			98.0		%		80-120	06-APR-16
Strontium (Sr)-Total			104.0		%		80-120	06-APR-16
Thallium (Tl)-Total			103.5		%		80-120	06-APR-16
Tin (Sn)-Total			102.7		%		80-120	06-APR-16
Vanadium (V)-Total			102.7		%		80-120	06-APR-16
Zinc (Zn)-Total			97.4		%		80-120	06-APR-16
WG2285227-1	MB							
Aluminum (Al)-Total			<0.010		mg/L		0.01	06-APR-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-APR-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-APR-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	06-APR-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	06-APR-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-APR-16
Boron (B)-Total			<0.010		mg/L		0.01	06-APR-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	06-APR-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	06-APR-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-APR-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	06-APR-16
Iron (Fe)-Total			<0.050		mg/L		0.05	06-APR-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	06-APR-16
Magnesium (Mg)-Total			<0.050		mg/L		0.05	06-APR-16



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT								
	Water							
Batch	R3433155							
WG2285227-1 MB								
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	06-APR-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-APR-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-APR-16
Potassium (K)-Total			<0.050		mg/L		0.05	06-APR-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-APR-16
Silicon (Si)-Total			<0.050		mg/L		0.05	06-APR-16
Silver (Ag)-Total			<0.000050		mg/L		0.00005	06-APR-16
Sodium (Na)-Total			<0.50		mg/L		0.5	06-APR-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	06-APR-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-APR-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-APR-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	06-APR-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-APR-16
WG2285227-5 MS		WG2285227-3						
Aluminum (Al)-Total			N/A	MS-B	%		-	06-APR-16
Antimony (Sb)-Total			96.9		%		70-130	06-APR-16
Arsenic (As)-Total			95.6		%		70-130	06-APR-16
Barium (Ba)-Total			N/A	MS-B	%		-	06-APR-16
Beryllium (Be)-Total			89.6		%		70-130	06-APR-16
Bismuth (Bi)-Total			93.5		%		70-130	06-APR-16
Boron (B)-Total			92.8		%		70-130	06-APR-16
Cadmium (Cd)-Total			95.7		%		70-130	06-APR-16
Calcium (Ca)-Total			N/A	MS-B	%		-	06-APR-16
Cobalt (Co)-Total			93.8		%		70-130	06-APR-16
Copper (Cu)-Total			96.5		%		70-130	06-APR-16
Iron (Fe)-Total			N/A	MS-B	%		-	06-APR-16
Lead (Pb)-Total			96.2		%		70-130	06-APR-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	06-APR-16
Manganese (Mn)-Total			N/A	MS-B	%		-	06-APR-16
Molybdenum (Mo)-Total			99.7		%		70-130	06-APR-16
Nickel (Ni)-Total			90.5		%		70-130	06-APR-16
Potassium (K)-Total			N/A	MS-B	%		-	06-APR-16
Selenium (Se)-Total			74.2		%		70-130	06-APR-16
Silicon (Si)-Total			N/A	MS-B	%		-	06-APR-16



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3433155							
WG2285227-5 MS		WG2285227-3						
Silver (Ag)-Total			96.3		%		70-130	06-APR-16
Sodium (Na)-Total			N/A	MS-B	%		-	06-APR-16
Strontium (Sr)-Total			N/A	MS-B	%		-	06-APR-16
Thallium (Tl)-Total			93.1		%		70-130	06-APR-16
Tin (Sn)-Total			98.0		%		70-130	06-APR-16
Vanadium (V)-Total			98.6		%		70-130	06-APR-16
Zinc (Zn)-Total			84.0		%		70-130	06-APR-16
NH3-WT		Water						
Batch	R3429805							
WG2284383-16 DUP		L1750708-1						
Ammonia, Total (as N)		0.149	0.141		mg/L	5.6	20	01-APR-16
WG2284383-14 LCS								
Ammonia, Total (as N)			103.4		%		85-115	01-APR-16
WG2284383-13 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	01-APR-16
WG2284383-15 MS		L1750708-1						
Ammonia, Total (as N)			101.7		%		75-125	01-APR-16
NO2-IC-WT		Water						
Batch	R3430320							
WG2285343-19 DUP		WG2285343-20						
Nitrite (as N)		0.045	0.044		mg/L	1.8	25	04-APR-16
WG2285343-17 LCS								
Nitrite (as N)			102.9		%		70-130	04-APR-16
WG2285343-16 MB								
Nitrite (as N)			<0.010		mg/L		0.01	04-APR-16
WG2285343-18 MS		WG2285343-20						
Nitrite (as N)			103.6		%		70-130	04-APR-16
NO3-IC-WT		Water						
Batch	R3430320							
WG2285343-19 DUP		WG2285343-20						
Nitrate (as N)		0.487	0.483		mg/L	0.8	25	04-APR-16
WG2285343-17 LCS								
Nitrate (as N)			101.7		%		70-130	04-APR-16
WG2285343-16 MB								
Nitrate (as N)			<0.020		mg/L		0.02	04-APR-16
WG2285343-18 MS		WG2285343-20						



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	Water							
Batch	R3430320							
WG2285343-18 MS		WG2285343-20						
Nitrate (as N)			102.4		%		70-130	04-APR-16
P-T-LOW-COL-WT	Water							
Batch	R3433853							
WG2286482-2 LCS								
Total Phosphorus			99.6		%		80-120	07-APR-16
WG2286482-1 MB								
Total Phosphorus			<0.0030		mg/L		0.003	08-APR-16
WG2286482-4 MS		L1751164-1						
Total Phosphorus			84.9		%		70-130	07-APR-16
PH-WT	Water							
Batch	R3429825							
WG2285147-9 DUP		WG2285147-8						
pH		7.80	7.86	J	pH units	0.06	0.2	03-APR-16
WG2285147-7 LCS								
pH			7.00		pH units		6.9-7.1	03-APR-16
PHENOLS-4AAP-WT	Water							
Batch	R3429846							
WG2285005-7 DUP		L1750457-5						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-APR-16
WG2285005-6 LCS								
Phenols (4AAP)			103.4		%		85-115	02-APR-16
WG2285005-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	02-APR-16
WG2285005-8 MS		L1750457-5						
Phenols (4AAP)			100.0		%		75-125	02-APR-16
SO4-IC-N-WT	Water							
Batch	R3430320							
WG2285343-19 DUP		WG2285343-20						
Sulfate (SO4)		25.6	25.6		mg/L	0.1	20	04-APR-16
WG2285343-17 LCS								
Sulfate (SO4)			101.8		%		90-110	04-APR-16
WG2285343-16 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-APR-16
WG2285343-18 MS		WG2285343-20						
Sulfate (SO4)			100.3		%		75-125	04-APR-16



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651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT		Water						
Batch	R3430062							
WG2285502-3	DUP	L1750457-10						
Total Dissolved Solids		286	288		mg/L	0.7	20	04-APR-16
WG2285502-2	LCS							
Total Dissolved Solids			94.2		%		85-115	04-APR-16
WG2285502-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-APR-16
SOLIDS-TSS-WT		Water						
Batch	R3433236							
WG2286056-3	DUP	L1750506-2						
Total Suspended Solids		1850	1800		mg/L	2.5	20	06-APR-16
WG2286056-2	LCS							
Total Suspended Solids			101.0		%		85-115	06-APR-16
WG2286056-1	MB							
Total Suspended Solids			<2.0		mg/L		2	06-APR-16
TKN-WT		Water						
Batch	R3434497							
WG2287181-7	DUP	L1750670-1						
Total Kjeldahl Nitrogen		2.06	1.90		mg/L	7.9	20	07-APR-16
WG2287181-6	LCS							
Total Kjeldahl Nitrogen			121.8		%		75-125	07-APR-16
WG2287181-5	MB							
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	07-APR-16
WG2287181-8	MS	L1750670-1						
Total Kjeldahl Nitrogen			104.1		%		70-130	07-APR-16
VOC-ROU-HS-WT		Water						
Batch	R3429497							
WG2282789-4	DUP	WG2282789-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	05-APR-16
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3429497							
WG2282789-4	DUP	WG2282789-3						
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	05-APR-16
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-APR-16
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	05-APR-16
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	05-APR-16
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
Trichloroethylene		1.29	1.22		ug/L	5.6	30	05-APR-16
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-APR-16
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-APR-16
WG2282789-1	LCS							



Quality Control Report

Workorder: L1750708

Report Date: 08-APR-16

Page 15 of 18

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3429497							
WG2282789-1	LCS							
1,1,1,2-Tetrachloroethane			103.2		%		70-130	01-APR-16
1,1,2,2-Tetrachloroethane			108.4		%		70-130	01-APR-16
1,1,1-Trichloroethane			107.2		%		70-130	01-APR-16
1,1,2-Trichloroethane			109.8		%		70-130	01-APR-16
1,2-Dibromoethane			111.2		%		70-130	01-APR-16
1,1-Dichloroethane			97.9		%		70-130	01-APR-16
1,1-Dichloroethylene			97.3		%		70-130	01-APR-16
1,2-Dichlorobenzene			102.5		%		70-130	01-APR-16
1,2-Dichloroethane			117.8		%		70-130	01-APR-16
1,2-Dichloropropane			108.1		%		70-130	01-APR-16
1,3-Dichlorobenzene			99.4		%		70-130	01-APR-16
1,4-Dichlorobenzene			102.8		%		70-130	01-APR-16
Acetone			126.9		%		60-140	01-APR-16
Benzene			105.3		%		70-130	01-APR-16
Bromodichloromethane			111.4		%		70-130	01-APR-16
Bromoform			112.6		%		70-130	01-APR-16
Bromomethane			95.6		%		60-140	01-APR-16
Carbon tetrachloride			104.4		%		70-130	01-APR-16
Chlorobenzene			102.5		%		70-130	01-APR-16
Chloroethane			96.3		%		70-130	01-APR-16
Chloroform			109.4		%		70-130	01-APR-16
cis-1,2-Dichloroethylene			107.1		%		70-130	01-APR-16
cis-1,3-Dichloropropene			110.3		%		70-130	01-APR-16
Dibromochloromethane			113.6		%		70-130	01-APR-16
Dichlorodifluoromethane			62.0		%		60-140	01-APR-16
Dichloromethane			112.0		%		70-130	01-APR-16
Ethylbenzene			90.9		%		70-130	01-APR-16
m+p-Xylenes			95.4		%		70-130	01-APR-16
Methyl Ethyl Ketone			124.2		%		60-140	01-APR-16
Methyl Isobutyl Ketone			101.2		%		50-150	01-APR-16
n-Hexane			100.7		%		70-130	01-APR-16
MTBE			103.0		%		70-130	01-APR-16
o-Xylene			93.7		%		70-130	01-APR-16



Quality Control Report

Workorder: L1750708

Report Date: 08-APR-16

Page 16 of 18

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3429497							
WG2282789-1	LCS							
Styrene			96.4		%		70-130	01-APR-16
Tetrachloroethylene			96.2		%		70-130	01-APR-16
Toluene			93.1		%		70-130	01-APR-16
trans-1,2-Dichloroethylene			102.2		%		70-130	01-APR-16
trans-1,3-Dichloropropene			100.3		%		70-130	01-APR-16
Trichloroethylene			104.7		%		70-130	01-APR-16
Trichlorofluoromethane			98.4		%		60-140	01-APR-16
Vinyl chloride			85.3		%		60-140	01-APR-16
WG2282789-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	04-APR-16
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	04-APR-16
1,1,1-Trichloroethane			<0.50		ug/L		0.5	04-APR-16
1,1,2-Trichloroethane			<0.50		ug/L		0.5	04-APR-16
1,2-Dibromoethane			<0.20		ug/L		0.2	04-APR-16
1,1-Dichloroethane			<0.50		ug/L		0.5	04-APR-16
1,1-Dichloroethylene			<0.50		ug/L		0.5	04-APR-16
1,2-Dichlorobenzene			<0.50		ug/L		0.5	04-APR-16
1,2-Dichloroethane			<0.50		ug/L		0.5	04-APR-16
1,2-Dichloropropane			<0.50		ug/L		0.5	04-APR-16
1,3-Dichlorobenzene			<0.50		ug/L		0.5	04-APR-16
1,4-Dichlorobenzene			<0.50		ug/L		0.5	04-APR-16
Acetone			<20		ug/L		20	04-APR-16
Benzene			<0.50		ug/L		0.5	04-APR-16
Bromodichloromethane			<1.0		ug/L		1	04-APR-16
Bromoform			<1.0		ug/L		1	04-APR-16
Bromomethane			<0.50		ug/L		0.5	04-APR-16
Carbon tetrachloride			<0.50		ug/L		0.5	04-APR-16
Chlorobenzene			<0.50		ug/L		0.5	04-APR-16
Chloroethane			<1.0		ug/L		1	04-APR-16
Chloroform			<1.0		ug/L		1	04-APR-16
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-APR-16
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	04-APR-16
Dibromochloromethane			<1.0		ug/L		1	04-APR-16
Dichlorodifluoromethane			<1.0		ug/L		1	04-APR-16



Quality Control Report

Workorder: L1750708

Report Date: 08-APR-16

Page 17 of 18

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3429497							
WG2282789-2	MB							
Dichloromethane			<2.0		ug/L		2	04-APR-16
Ethylbenzene			<0.50		ug/L		0.5	04-APR-16
m+p-Xylenes			<1.0		ug/L		1	04-APR-16
Methyl Ethyl Ketone			<20		ug/L		20	04-APR-16
Methyl Isobutyl Ketone			<20		ug/L		20	04-APR-16
n-Hexane			<0.50		ug/L		0.5	04-APR-16
MTBE			<0.50		ug/L		0.5	04-APR-16
o-Xylene			<0.50		ug/L		0.5	04-APR-16
Styrene			<0.50		ug/L		0.5	04-APR-16
Tetrachloroethylene			<0.50		ug/L		0.5	04-APR-16
Toluene			<0.50		ug/L		0.5	04-APR-16
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-APR-16
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	04-APR-16
Trichloroethylene			<0.50		ug/L		0.5	04-APR-16
Trichlorofluoromethane			<1.0		ug/L		1	04-APR-16
Vinyl chloride			<0.50		ug/L		0.5	04-APR-16
Surrogate: 1,4-Difluorobenzene			102.9		%		70-130	04-APR-16
Surrogate: 4-Bromofluorobenzene			95.4		%		70-130	04-APR-16

Quality Control Report

Workorder: L1750708

Report Date: 08-APR-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Page 18 of 18

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
J	Duplicate results and limits are expressed in terms of absolute difference.
K	Matrix Spike recovery outside ALS DQO due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L1750708-COFC

Report To: ERICA CARABOTT		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)									
Company: CLEAN HARBORS CANADA INC.		Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3pm)									
Contact: ERICA CARABOTT, ROB GIRARD		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 business days if received by 3pm)									
Address: 4010 TELFER RD., CORUNNA, ON, N0N 1G0		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 business days if received by 3pm)									
Phone: 519-864-3892		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency if received by 10am - contact ALS for surcharge.									
Email 1 or Fax: girard.rob@cleanharbors.com		Email 2: carabott.eric@cleanharbors.com			Specify Date Required for E2, E or P:									
Invoice To: Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Invoice Distribution			Analysis Request									
Copy of Invoice with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below									
Company:		Email 1 or Fax:			Number of Containers									
Contact:		Email 2:												
Project Information		Oil and Gas Required Fields (client use)												
ALS Quote #:		Approver ID:	Cost Center:											
Job #: 44985		GL Account:	Routing Code:											
PO / AFE:		Activity Code:												
LSD:		Location:												
ALS Lab Work Order # (lab use only): L1750708 1A		ALS Contact:	Sampler:											
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)						Sample Type				
	See site EQ POND		31-3-16	0900						Water. See att.				
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report (client Use)			SAMPLE CONDITION AS RECEIVED (lab use only)									
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>									
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>									
					Cooling Initiated <input type="checkbox"/>									
					INITIAL COOLER TEMPERATURES °C: 7.9 FINAL COOLER TEMPERATURES °C:									
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)									
Released by: R Tobin	Date: 03/31/16	Time: 15:30	Received by:	Date:	Time:	Received by: MU	Date: 1 APR 16	Time: 6 900						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

14-710-02256-1000 F1 (03/04) January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



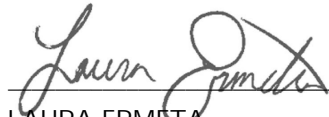
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 13-APR-16
Report Date: 18-APR-16 15:06 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1755058
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers: 14-501903
Legal Site Desc:


LAURA ERMETA
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1755058-1 EQ POND							
Sampled By: CLIENT on 12-APR-16 @ 10:30							
Matrix: WATER							
Microtox Physical Tests							
Turbidity	None				14-APR-16	14-APR-16	R3438212
Colour	Colourless				14-APR-16	14-APR-16	R3438212
Clarification	None				14-APR-16	14-APR-16	R3438212
Initial pH	7.6		0.10	pH	14-APR-16	14-APR-16	R3438212
Final pH	7.6		0.10	pH	14-APR-16	14-APR-16	R3438212
Lab Treatment	None				14-APR-16	14-APR-16	R3438212
Microtox Original							
EC50 (15min) Original	>100		1.0	%	14-APR-16	14-APR-16	R3438212
EC20 (15min) Original	>100		1.0	%	14-APR-16	14-APR-16	R3438212
EC50 (5min) Original	>100		1.0	%	14-APR-16	14-APR-16	R3438212
EC20 (5min) Original	>100		1.0	%	14-APR-16	14-APR-16	R3438212
Interpretation Original	NON TOXIC				14-APR-16	14-APR-16	R3438212

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MICROTOX-ORG-CL	Water	Microtox Original	WCMUC (1991)
MICROTOX-PHYSICAL-CL	Water	Microtox Physical Tests	WCMUC (1991)

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

14-501903

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Environmental

Quality Control Report

Workorder: L1755058

Report Date: 18-APR-16

Page 1 of 2

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MICROTOX-ORG-CL								
	Water							
Batch	R3438212							
WG2291505-2 CRM		PHENOL_CL						
EC50 (5min) Original			16.6		mg/L		13-26	14-APR-16
WG2291505-3 DUP		L1755058-1						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		14-APR-16
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		14-APR-16
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		14-APR-16
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		14-APR-16
WG2291505-1 MB								
EC50 (15min) Original			PASS					14-APR-16
EC20 (15min) Original			PASS					14-APR-16
EC50 (5min) Original			PASS					14-APR-16
EC20 (5min) Original			PASS					14-APR-16

Quality Control Report

Workorder: L1755058

Report Date: 18-APR-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Page 2 of 2

Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



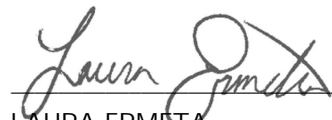
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 03-MAY-16
Report Date: 10-MAY-16 14:35 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1763136
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-1 SW-44985-050316-MS-003							
Sampled By: M. SPARKS on 03-MAY-16 @ 09:00							
Matrix: WATER							
Physical Tests							
Conductivity	732		3.0	umhos/cm		03-MAY-16	R3450828
Hardness (as CaCO3)	314		10	mg/L		06-MAY-16	
pH	8.34		0.10	pH units		03-MAY-16	R3450818
Total Suspended Solids	25.7		2.0	mg/L	05-MAY-16	06-MAY-16	R3452658
Total Dissolved Solids	450	DLDS	20	mg/L		04-MAY-16	R3451469
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	132		10	mg/L		05-MAY-16	R3452712
Ammonia, Total (as N)	<0.020		0.020	mg/L		04-MAY-16	R3451082
Bromide (Br)	0.35		0.10	mg/L		05-MAY-16	R3452855
Chloride (Cl)	59.8		0.50	mg/L		05-MAY-16	R3452855
Fluoride (F)	0.542		0.020	mg/L		05-MAY-16	R3452855
Nitrate (as N)	0.135		0.020	mg/L		05-MAY-16	R3452855
Nitrite (as N)	<0.010		0.010	mg/L		05-MAY-16	R3452855
Total Kjeldahl Nitrogen	0.68		0.15	mg/L	05-MAY-16	05-MAY-16	R3451928
Phosphorus, Total	0.0328		0.0030	mg/L	05-MAY-16	06-MAY-16	R3451947
Sulfate (SO4)	161		0.30	mg/L		05-MAY-16	R3452855
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		05-MAY-16	R3452773
Organic / Inorganic Carbon							
Dissolved Organic Carbon	8.8		1.0	mg/L		04-MAY-16	R3451930
Total Metals							
Aluminum (Al)-Total	0.517		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Antimony (Sb)-Total	0.00070		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Arsenic (As)-Total	0.00139		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Barium (Ba)-Total	0.0425		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451534
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Boron (B)-Total	0.179		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Cadmium (Cd)-Total	<0.000080	DLUI	0.000080	mg/L	04-MAY-16	04-MAY-16	R3451534
Calcium (Ca)-Total	82.2		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Cobalt (Co)-Total	0.00055		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Copper (Cu)-Total	0.0022		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Iron (Fe)-Total	0.449		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Lead (Pb)-Total	0.00039		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Magnesium (Mg)-Total	26.3		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Manganese (Mn)-Total	0.0484		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-MAY-16	R3450823
Molybdenum (Mo)-Total	0.0511		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Nickel (Ni)-Total	0.00330		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Potassium (K)-Total	4.38		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Selenium (Se)-Total	0.00216		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silicon (Si)-Total	2.28		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-1 SW-44985-050316-MS-003							
Sampled By: M. SPARKS on 03-MAY-16 @ 09:00							
Matrix: WATER							
Total Metals							
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Sodium (Na)-Total	37.9		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Strontium (Sr)-Total	0.598		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Thallium (Tl)-Total	0.000024		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Tin (Sn)-Total	0.00012		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Vanadium (V)-Total	0.00135		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Zinc (Zn)-Total	0.0030		0.0030	mg/L	04-MAY-16	04-MAY-16	R3451534
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		04-MAY-16	R3451554
Aggregate Organics							
COD	40		10	mg/L		06-MAY-16	R3451961
Phenols (4AAP)	0.0041		0.0010	mg/L		04-MAY-16	R3451335
Volatile Organic Compounds							
Acetone	<20		20	ug/L		04-MAY-16	R3450786
Benzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Bromodichloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromoform	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromomethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Carbon tetrachloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
Chlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dibromochloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroform	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,2-Dibromoethane	<0.20		0.20	ug/L		04-MAY-16	R3450786
1,2-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,3-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,4-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichlorodifluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,1-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,2-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichloromethane	<2.0		2.0	ug/L		04-MAY-16	R3450786
1,2-Dichloropropane	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Ethylbenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
n-Hexane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Methyl Ethyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
Methyl Isobutyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
MTBE	<0.50		0.50	ug/L		04-MAY-16	R3450786

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-1 SW-44985-050316-MS-003 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Volatile Organic Compounds							
Styrene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Tetrachloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Toluene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichlorofluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Vinyl chloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
o-Xylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
m+p-Xylenes	<1.0		1.0	ug/L		04-MAY-16	R3450786
Xylenes (Total)	<1.1		1.1	ug/L		04-MAY-16	
Surrogate: 4-Bromofluorobenzene	94.3		70-130	%		04-MAY-16	R3450786
Surrogate: 1,4-Difluorobenzene	99.7		70-130	%		04-MAY-16	R3450786
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: Phenol d5	54.9		30-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2,4,6-Tribromophenol	95.1		40-150	%	06-MAY-16	10-MAY-16	R3452934
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Acenaphthylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(a)anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(a)pyrene	<0.050		0.050	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(b)fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(ghi)perylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(k)fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
4-Chloroaniline	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Chlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Chrysene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,3-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,4-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dichlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Diethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dimethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dimethylphenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-1 SW-44985-050316-MS-003 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dinitrophenol	<2.0	RRR	2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,6-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluorene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobenzene	<0.040		0.040	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobutadiene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
1-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Naphthalene	0.26		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Pentachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Perylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Phenanthrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Pyrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2-Fluorobiphenyl	77.9		40-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: Nitrobenzene d5	88.0		50-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: p-Terphenyl d14	93.4		40-130	%	06-MAY-16	10-MAY-16	R3452934
Report Remarks : RRR: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.							
L1763136-2 SW-44985-050316-MS-004 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Physical Tests							
Conductivity	700		3.0	umhos/cm		03-MAY-16	R3450828
Hardness (as CaCO3)	310		10	mg/L		06-MAY-16	
pH	8.41		0.10	pH units		03-MAY-16	R3450818
Total Suspended Solids	21.0		2.0	mg/L	05-MAY-16	06-MAY-16	R3452658
Total Dissolved Solids	451	DLDS	20	mg/L		04-MAY-16	R3451469
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	122		10	mg/L		05-MAY-16	R3452712
Ammonia, Total (as N)	<0.020		0.020	mg/L		04-MAY-16	R3451082
Bromide (Br)	0.30		0.10	mg/L		05-MAY-16	R3452855
Chloride (Cl)	38.7		0.50	mg/L		05-MAY-16	R3452855
Fluoride (F)	0.645		0.020	mg/L		05-MAY-16	R3452855
Nitrate (as N)	0.058		0.020	mg/L		05-MAY-16	R3452855
Nitrite (as N)	<0.010		0.010	mg/L		05-MAY-16	R3452855

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-2 SW-44985-050316-MS-004 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Anions and Nutrients							
Total Kjeldahl Nitrogen	0.46		0.15	mg/L	05-MAY-16	05-MAY-16	R3451928
Phosphorus, Total	0.0239		0.0030	mg/L	05-MAY-16	06-MAY-16	R3451947
Sulfate (SO4)	186		0.30	mg/L		05-MAY-16	R3452855
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		05-MAY-16	R3452773
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.0		1.0	mg/L		04-MAY-16	R3451930
Total Metals							
Aluminum (Al)-Total	0.667		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Antimony (Sb)-Total	0.00066		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Arsenic (As)-Total	0.00122		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Barium (Ba)-Total	0.0413		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451534
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Boron (B)-Total	0.095		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Cadmium (Cd)-Total	<0.000080	DLUI	0.000080	mg/L	04-MAY-16	04-MAY-16	R3451534
Calcium (Ca)-Total	82.9		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Cobalt (Co)-Total	0.00063		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Copper (Cu)-Total	0.0022		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Iron (Fe)-Total	0.599		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Lead (Pb)-Total	0.00052		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Magnesium (Mg)-Total	24.9		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Manganese (Mn)-Total	0.0372		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-MAY-16	R3450823
Molybdenum (Mo)-Total	0.0570		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Nickel (Ni)-Total	0.00285		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Potassium (K)-Total	3.97		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Selenium (Se)-Total	0.00281		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silicon (Si)-Total	2.35		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Sodium (Na)-Total	27.4		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Strontium (Sr)-Total	0.712		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Thallium (Tl)-Total	0.000041		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Tin (Sn)-Total	0.00012		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Vanadium (V)-Total	0.00155		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Zinc (Zn)-Total	0.0037		0.0030	mg/L	04-MAY-16	04-MAY-16	R3451534
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		04-MAY-16	R3451554
Aggregate Organics							
COD	26		10	mg/L		06-MAY-16	R3451961
Phenols (4AAP)	0.0019		0.0010	mg/L		04-MAY-16	R3451335
Volatile Organic Compounds							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-2 SW-44985-050316-MS-004							
Sampled By: M. SPARKS on 03-MAY-16 @ 09:00							
Matrix: WATER							
Volatile Organic Compounds							
Acetone	<20		20	ug/L		04-MAY-16	R3450786
Benzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Bromodichloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromoform	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromomethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Carbon tetrachloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
Chlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dibromochloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroform	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,2-Dibromoethane	<0.20		0.20	ug/L		04-MAY-16	R3450786
1,2-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,3-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,4-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichlorodifluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,1-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,2-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichloromethane	<2.0		2.0	ug/L		04-MAY-16	R3450786
1,2-Dichloropropane	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Ethylbenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
n-Hexane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Methyl Ethyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
Methyl Isobutyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
MTBE	<0.50		0.50	ug/L		04-MAY-16	R3450786
Styrene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Tetrachloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Toluene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichlorofluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Vinyl chloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
o-Xylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
m+p-Xylenes	<1.0		1.0	ug/L		04-MAY-16	R3450786

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-2 SW-44985-050316-MS-004							
Sampled By: M. SPARKS on 03-MAY-16 @ 09:00							
Matrix: WATER							
Volatile Organic Compounds							
Xylenes (Total)	<1.1		1.1	ug/L		04-MAY-16	
Surrogate: 4-Bromofluorobenzene	93.8		70-130	%		04-MAY-16	R3450786
Surrogate: 1,4-Difluorobenzene	98.3		70-130	%		04-MAY-16	R3450786
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: Phenol d5	44.4		30-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2,4,6-Tribromophenol	73.9		40-150	%	06-MAY-16	10-MAY-16	R3452934
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Acenaphthylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(a)anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(a)pyrene	<0.10	DLI	0.10	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(b)fluoranthene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(ghi)perylene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(k)fluoranthene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
4-Chloroaniline	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Chlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Chrysene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dibenzo(a,h)anthracene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,3-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,4-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dichlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Diethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dimethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dimethylphenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dinitrophenol	<2.0	RRR	2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,6-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluorene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobenzene	<0.040		0.040	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobutadiene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Indeno(1,2,3-cd)pyrene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Naphthalene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-2 SW-44985-050316-MS-004 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Semi-Volatile Organics							
Pentachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Perylene	<0.40	DLI	0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Phenanthrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Pyrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2-Fluorobiphenyl	67.8		40-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: Nitrobenzene d5	75.5		50-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: p-Terphenyl d14	70.9		40-130	%	06-MAY-16	10-MAY-16	R3452934
Report Remarks : RRR: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.							
L1763136-3 SW-44985-050316-MS-005 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Physical Tests							
Conductivity	752		3.0	umhos/cm		03-MAY-16	R3450828
Hardness (as CaCO3)	297		10	mg/L		06-MAY-16	
pH	8.26		0.10	pH units		03-MAY-16	R3450818
Total Suspended Solids	4.8		2.0	mg/L	05-MAY-16	06-MAY-16	R3452658
Total Dissolved Solids	460	DLDS	20	mg/L		04-MAY-16	R3451469
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	130		10	mg/L		05-MAY-16	R3452712
Ammonia, Total (as N)	0.113		0.020	mg/L		04-MAY-16	R3451082
Bromide (Br)	0.31		0.10	mg/L		05-MAY-16	R3452855
Chloride (Cl)	58.4		0.50	mg/L		05-MAY-16	R3452855
Fluoride (F)	0.587		0.020	mg/L		05-MAY-16	R3452855
Nitrate (as N)	0.218		0.020	mg/L		05-MAY-16	R3452855
Nitrite (as N)	<0.010		0.010	mg/L		05-MAY-16	R3452855
Total Kjeldahl Nitrogen	0.41		0.15	mg/L	05-MAY-16	05-MAY-16	R3451928
Phosphorus, Total	0.0156		0.0030	mg/L	05-MAY-16	06-MAY-16	R3451947
Sulfate (SO4)	164		0.30	mg/L		05-MAY-16	R3452855
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		05-MAY-16	R3452773
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.4		1.0	mg/L		04-MAY-16	R3451930
Total Metals							
Aluminum (Al)-Total	0.134		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Antimony (Sb)-Total	0.00056		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Arsenic (As)-Total	0.00094		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Barium (Ba)-Total	0.0379		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451534

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-3 SW-44985-050316-MS-005 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Total Metals							
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Boron (B)-Total	0.172		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Cadmium (Cd)-Total	0.000039		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Calcium (Ca)-Total	79.6		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Cobalt (Co)-Total	0.00033		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Copper (Cu)-Total	0.0015		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Iron (Fe)-Total	0.113		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Lead (Pb)-Total	0.00022		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Magnesium (Mg)-Total	23.8		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Manganese (Mn)-Total	0.0135		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-MAY-16	R3450823
Molybdenum (Mo)-Total	0.0426		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Nickel (Ni)-Total	0.00268		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Potassium (K)-Total	3.66		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Selenium (Se)-Total	0.00214		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silicon (Si)-Total	1.37		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Sodium (Na)-Total	36.1		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Strontium (Sr)-Total	0.597		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Thallium (Tl)-Total	0.000018		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Vanadium (V)-Total	0.00055		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-MAY-16	04-MAY-16	R3451534
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		04-MAY-16	R3451554
Aggregate Organics							
COD	25		10	mg/L		06-MAY-16	R3451961
Phenols (4AAP)	0.0018		0.0010	mg/L		04-MAY-16	R3451335
Volatile Organic Compounds							
Acetone	<20		20	ug/L		04-MAY-16	R3450786
Benzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Bromodichloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromoform	<1.0		1.0	ug/L		04-MAY-16	R3450786
Bromomethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Carbon tetrachloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
Chlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dibromochloromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Chloroform	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,2-Dibromoethane	<0.20		0.20	ug/L		04-MAY-16	R3450786
1,2-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-3 SW-44985-050316-MS-005 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Volatile Organic Compounds							
1,3-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,4-Dichlorobenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichlorodifluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
1,1-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,2-Dichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Dichloromethane	<2.0		2.0	ug/L		04-MAY-16	R3450786
1,2-Dichloropropane	<0.50		0.50	ug/L		04-MAY-16	R3450786
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Ethylbenzene	<0.50		0.50	ug/L		04-MAY-16	R3450786
n-Hexane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Methyl Ethyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
Methyl Isobutyl Ketone	<20		20	ug/L		04-MAY-16	R3450786
MTBE	<0.50		0.50	ug/L		04-MAY-16	R3450786
Styrene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Tetrachloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Toluene	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,1-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
1,1,2-Trichloroethane	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichloroethylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
Trichlorofluoromethane	<1.0		1.0	ug/L		04-MAY-16	R3450786
Vinyl chloride	<0.50		0.50	ug/L		04-MAY-16	R3450786
o-Xylene	<0.50		0.50	ug/L		04-MAY-16	R3450786
m+p-Xylenes	<1.0		1.0	ug/L		04-MAY-16	R3450786
Xylenes (Total)	<1.1		1.1	ug/L		04-MAY-16	
Surrogate: 4-Bromofluorobenzene	97.2		70-130	%		04-MAY-16	R3450786
Surrogate: 1,4-Difluorobenzene	99.5		70-130	%		04-MAY-16	R3450786
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: Phenol d5	54.5		30-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2,4,6-Tribromophenol	83.5		40-150	%	06-MAY-16	10-MAY-16	R3452934
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Acenaphthylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(a)anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-3 SW-44985-050316-MS-005 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER							
Semi-Volatile Organics							
Benzo(a)pyrene	<0.050		0.050	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(b)fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(ghi)perylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Benzo(k)fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
4-Chloroaniline	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Chlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Chrysene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,3-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
1,4-Dichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dichlorophenol	<0.30		0.30	ug/L	06-MAY-16	10-MAY-16	R3452934
Diethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Dimethylphthalate	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dimethylphenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dinitrophenol	<2.0	RRR	2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,6-Dinitrotoluene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluoranthene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Fluorene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobenzene	<0.040		0.040	ug/L	06-MAY-16	10-MAY-16	R3452934
Hexachlorobutadiene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
1-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2-Methylnaphthalene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
Naphthalene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Pentachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Perylene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Phenanthrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
Pyrene	<0.20		0.20	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	06-MAY-16	10-MAY-16	R3452934
Surrogate: 2-Fluorobiphenyl	75.0		40-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: Nitrobenzene d5	86.7		50-130	%	06-MAY-16	10-MAY-16	R3452934
Surrogate: p-Terphenyl d14	92.6		40-130	%	06-MAY-16	10-MAY-16	R3452934

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763136-3 SW-44985-050316-MS-005 Sampled By: M. SPARKS on 03-MAY-16 @ 09:00 Matrix: WATER Semi-Volatile Organics Report Remarks : RRR: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Total Suspended Solids	DLHC	L1763136-1, -2, -3
Laboratory Control Sample	2,4-Dimethylphenol	MES	L1763136-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L1763136-1, -2, -3
Matrix Spike	Phenols (4AAP)	MS-B	L1763136-1, -2, -3
Matrix Spike	Aluminum (Al)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Cyanide, Total	MS-B	L1763136-1, -2, -3
Matrix Spike	Nitrate (as N)	MS-B	L1763136-1, -2, -3
Method Blank	2,4-Dinitrophenol	RRQC	L1763136-1, -2, -3

Comments: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLI	Detection Limit Raised: Dilution required to address Internal Standard response problems caused by matrix interference.
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRQC	Refer to report remarks for information regarding this QC result.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD.	SW846 8270
625-WT	Water	EPA 8270 Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.	SW846 8270
ALK-WT	Water	Alkalinity, Total (as CaCO ₃)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
C-DIS-ORG-WT	Water	Dissolved Organic Carbon Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.	APHA 5310 B-INSTRUMENTAL
CL-IC-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
CN-TOT-WT	Water	Cyanide, Total Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.	APHA 4500CN C E-STRONG ACID DIST COLORIM

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

Reference Information

COD-WT	Water	Chemical Oxygen Demand	APHA 5220 D
This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.			
CR-CR6-IC-WT	Water	Chromium +6	EPA 7199
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P B E
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.			
TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-N
Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.			
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260

Reference Information

Aqueous samples are analyzed by headspace-GC/MS.

XYLENES-SUM-CALC- WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
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Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1763136

Report Date: 10-MAY-16

Page 1 of 18

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-ACID-EXTRA-WT								
Water								
Batch R3452934								
WG2302690-2 LCS								
2,3,6-Trichlorophenol			81.0		%		50-130	06-MAY-16
WG2302690-3 LCSD								
2,3,6-Trichlorophenol		WG2302690-2	70.5		%	14	50	06-MAY-16
WG2302690-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	06-MAY-16
Surrogate: Phenol d5			48.6		%		30-130	06-MAY-16
Surrogate: 2,4,6-Tribromophenol			70.4		%		40-150	06-MAY-16
625-WT								
Water								
Batch R3452934								
WG2302690-2 LCS								
1-Methylnaphthalene			71.6		%		50-140	06-MAY-16
1,2-Dichlorobenzene			62.1		%		40-130	06-MAY-16
1,2,4-Trichlorobenzene			61.6		%		40-130	06-MAY-16
1,3-Dichlorobenzene			57.5		%		50-140	06-MAY-16
1,4-Dichlorobenzene			60.3		%		40-130	06-MAY-16
2-Chlorophenol			63.9		%		50-140	06-MAY-16
2-Methylnaphthalene			66.8		%		50-140	06-MAY-16
2,3,4,5-Tetrachlorophenol			76.9		%		50-140	06-MAY-16
2,3,4,6-Tetrachlorophenol			80.2		%		50-140	06-MAY-16
2,4-Dichlorophenol			59.7		%		50-140	06-MAY-16
2,4-Dimethylphenol			44.6	MES	%		50-140	06-MAY-16
2,4-Dinitrophenol			66.3		%		40-140	06-MAY-16
2,4-Dinitrotoluene			79.8		%		50-140	06-MAY-16
2,4,5-Trichlorophenol			77.3		%		50-140	06-MAY-16
2,4,6-Trichlorophenol			69.1		%		50-140	06-MAY-16
2,6-Dinitrotoluene			81.5		%		50-140	06-MAY-16
3,3'-Dichlorobenzidine			102.4		%		50-140	06-MAY-16
4-Chloroaniline			68.3		%		30-140	06-MAY-16
Acenaphthene			81.7		%		50-140	06-MAY-16
Acenaphthylene			82.5		%		50-140	06-MAY-16
Anthracene			83.2		%		50-140	06-MAY-16
Benzo(a)anthracene			92.3		%		50-140	06-MAY-16
Benzo(a)pyrene			84.0		%		60-130	06-MAY-16
Benzo(b)fluoranthene			89.5		%		50-140	06-MAY-16



Quality Control Report

Workorder: L1763136

Report Date: 10-MAY-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3452934							
WG2302690-2 LCS								
Benzo(ghi)perylene			61.6		%		50-140	06-MAY-16
Benzo(k)fluoranthene			85.3		%		50-140	06-MAY-16
Bis(2-chloroethyl)ether			72.8		%		50-140	06-MAY-16
Bis(2-ethylhexyl)phthalate			106.1		%		50-140	06-MAY-16
Chrysene			91.2		%		50-140	06-MAY-16
Dibenzo(a,h)anthracene			69.2		%		50-140	06-MAY-16
Diethylphthalate			81.5		%		50-140	06-MAY-16
Dimethylphthalate			76.8		%		50-140	06-MAY-16
Fluoranthene			78.4		%		50-140	06-MAY-16
Fluorene			78.3		%		50-140	06-MAY-16
Hexachlorobenzene			67.9		%		40-130	06-MAY-16
Hexachlorobutadiene			46.3		%		40-130	06-MAY-16
Indeno(1,2,3-cd)pyrene			76.2		%		50-140	06-MAY-16
Naphthalene			72.8		%		50-140	06-MAY-16
Pentachlorophenol			95.4		%		50-140	06-MAY-16
Perylene			78.3		%		50-140	06-MAY-16
Phenanthrene			82.3		%		50-140	06-MAY-16
Pyrene			80.5		%		50-140	06-MAY-16
WG2302690-3 LCS		WG2302690-2						
1-Methylnaphthalene		71.6	78.1		%	8.7	50	06-MAY-16
1,2-Dichlorobenzene		62.1	69.7		%	12	50	06-MAY-16
1,2,4-Trichlorobenzene		61.6	67.9		%	9.8	50	06-MAY-16
1,3-Dichlorobenzene		57.5	66.1		%	14	50	06-MAY-16
1,4-Dichlorobenzene		60.3	67.6		%	11	50	06-MAY-16
2-Chlorophenol		63.9	69.0		%	7.6	50	06-MAY-16
2-Methylnaphthalene		66.8	73.9		%	10	50	06-MAY-16
2,3,4,5-Tetrachlorophenol		76.9	78.4		%	2.0	50	06-MAY-16
2,3,4,6-Tetrachlorophenol		80.2	85.9		%	6.9	50	06-MAY-16
2,4-Dichlorophenol		59.7	62.4		%	4.5	50	06-MAY-16
2,4-Dimethylphenol		44.6	50.8		%	13	50	06-MAY-16
2,4-Dinitrophenol		66.3	63.3		%	4.6	50	06-MAY-16
2,4-Dinitrotoluene		79.8	82.4		%	3.2	50	06-MAY-16
2,4,5-Trichlorophenol		77.3	81.0		%	4.8	50	06-MAY-16



Quality Control Report

Workorder: L1763136

Report Date: 10-MAY-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3452934							
WG2302690-3	LCSD	WG2302690-2						
2,4,6-Trichlorophenol		69.1	74.4		%	7.5	50	06-MAY-16
2,6-Dinitrotoluene		81.5	85.1		%	4.2	50	06-MAY-16
3,3'-Dichlorobenzidine		102.4	103.9		%	1.5	50	06-MAY-16
4-Chloroaniline		68.3	74.4		%	8.6	50	06-MAY-16
Acenaphthene		81.7	84.5		%	3.3	50	06-MAY-16
Acenaphthylene		82.5	86.9		%	5.2	50	06-MAY-16
Anthracene		83.2	86.7		%	4.1	50	06-MAY-16
Benzo(a)anthracene		92.3	101.4		%	9.3	50	06-MAY-16
Benzo(a)pyrene		84.0	88.4		%	5.1	50	06-MAY-16
Benzo(b)fluoranthene		89.5	93.9		%	4.7	50	06-MAY-16
Benzo(ghi)perylene		61.6	62.7		%	1.7	50	06-MAY-16
Benzo(k)fluoranthene		85.3	88.4		%	3.6	50	06-MAY-16
Bis(2-chloroethyl)ether		72.8	76.0		%	4.4	50	06-MAY-16
Bis(2-ethylhexyl)phthalate		106.1	120.3		%	13	50	06-MAY-16
Chrysene		91.2	97.5		%	6.6	50	06-MAY-16
Dibenzo(a,h)anthracene		69.2	69.6		%	0.7	50	06-MAY-16
Diethylphthalate		81.5	87.1		%	6.6	50	06-MAY-16
Dimethylphthalate		76.8	79.7		%	3.6	50	06-MAY-16
Fluoranthene		78.4	92.3		%	16	50	06-MAY-16
Fluorene		78.3	83.2		%	6.1	50	06-MAY-16
Hexachlorobenzene		67.9	74.5		%	9.4	50	06-MAY-16
Hexachlorobutadiene		46.3	57.2		%	21	50	06-MAY-16
Indeno(1,2,3-cd)pyrene		76.2	75.0		%	1.5	50	06-MAY-16
Naphthalene		72.8	77.7		%	6.6	50	06-MAY-16
Pentachlorophenol		95.4	89.2		%	6.8	50	06-MAY-16
Perylene		78.3	83.1		%	6.0	50	06-MAY-16
Phenanthrene		82.3	85.0		%	3.3	50	06-MAY-16
Pyrene		80.5	94.1		%	16	50	06-MAY-16
WG2302690-1	MB							
1-Methylnaphthalene			<0.40		ug/L		0.4	06-MAY-16
1,2-Dichlorobenzene			<0.40		ug/L		0.4	06-MAY-16
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	06-MAY-16
1,3-Dichlorobenzene			<0.40		ug/L		0.4	06-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3452934							
WG2302690-1 MB								
1,4-Dichlorobenzene			<0.40		ug/L		0.4	06-MAY-16
2-Chlorophenol			<0.30		ug/L		0.3	06-MAY-16
2-Methylnaphthalene			<0.40		ug/L		0.4	06-MAY-16
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	06-MAY-16
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	06-MAY-16
2,4-Dichlorophenol			<0.30		ug/L		0.3	06-MAY-16
2,4-Dimethylphenol			<0.50		ug/L		0.5	06-MAY-16
2,4-Dinitrophenol			<2.0	RRQC	ug/L		1	06-MAY-16
2,4-Dinitrotoluene			<0.40		ug/L		0.4	06-MAY-16
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	06-MAY-16
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	06-MAY-16
2,6-Dinitrotoluene			<0.40		ug/L		0.4	06-MAY-16
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	06-MAY-16
4-Chloroaniline			<0.40		ug/L		0.4	06-MAY-16
Acenaphthene			<0.20		ug/L		0.2	06-MAY-16
Acenaphthylene			<0.20		ug/L		0.2	06-MAY-16
Anthracene			<0.20		ug/L		0.2	06-MAY-16
Benzo(a)anthracene			<0.20		ug/L		0.2	06-MAY-16
Benzo(a)pyrene			<0.050		ug/L		0.05	06-MAY-16
Benzo(b)fluoranthene			<0.20		ug/L		0.2	06-MAY-16
Benzo(ghi)perylene			<0.20		ug/L		0.2	06-MAY-16
Benzo(k)fluoranthene			<0.20		ug/L		0.2	06-MAY-16
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	06-MAY-16
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	06-MAY-16
Chrysene			<0.20		ug/L		0.2	06-MAY-16
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	06-MAY-16
Diethylphthalate			<0.20		ug/L		0.2	06-MAY-16
Dimethylphthalate			<0.20		ug/L		0.2	06-MAY-16
Fluoranthene			<0.20		ug/L		0.2	06-MAY-16
Fluorene			<0.20		ug/L		0.2	06-MAY-16
Hexachlorobenzene			<0.040		ug/L		0.04	06-MAY-16
Hexachlorobutadiene			<0.20		ug/L		0.2	06-MAY-16
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	06-MAY-16

COMMENTS: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3452934							
WG2302690-1	MB							
Naphthalene			<0.20		ug/L		0.2	06-MAY-16
Pentachlorophenol			<0.50		ug/L		0.5	06-MAY-16
Perylene			<0.20		ug/L		0.2	06-MAY-16
Phenanthrene			<0.20		ug/L		0.2	06-MAY-16
Pyrene			<0.20		ug/L		0.2	06-MAY-16
Surrogate: 2-Fluorobiphenyl			74.3		%		40-130	06-MAY-16
Surrogate: Nitrobenzene d5			83.8		%		50-130	06-MAY-16
Surrogate: p-Terphenyl d14			84.9		%		40-130	06-MAY-16

COMMENTS: Detection limit raised for 2,4-Dinitrophenol due to lowered sensitivity in continuing calibration standard.

ALK-WT	Water							
Batch	R3452712							
WG2303590-3	CRM	WT-ALK-CRM						
Alkalinity, Total (as CaCO3)			99.8		%		80-120	05-MAY-16
WG2303590-4	DUP	L1762422-1						
Alkalinity, Total (as CaCO3)		68	68		mg/L	0.2	20	05-MAY-16
WG2303590-2	LCS							
Alkalinity, Total (as CaCO3)			96.0		%		85-115	05-MAY-16
WG2303590-1	MB							
Alkalinity, Total (as CaCO3)			<10		mg/L		10	05-MAY-16

BR-IC-N-WT	Water							
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	05-MAY-16
WG2302725-2	LCS							
Bromide (Br)			96.7		%		85-115	05-MAY-16
WG2302725-1	MB							
Bromide (Br)			<0.10		mg/L		0.1	05-MAY-16
WG2302725-5	MS	L1763128-1						
Bromide (Br)			78.9		%		75-125	05-MAY-16

C-DIS-ORG-WT	Water							
Batch	R3451930							
WG2302508-3	DUP	L1762787-1						
Dissolved Organic Carbon		4.1	3.7		mg/L	12	20	04-MAY-16
WG2302508-2	LCS							
Dissolved Organic Carbon			97.8		%		80-120	04-MAY-16
WG2302508-1	MB							



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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-WT								
	Water							
Batch	R3451930							
WG2302508-1	MB							
Dissolved Organic Carbon			<1.0		mg/L		1	04-MAY-16
WG2302508-4	MS	L1762787-1						
Dissolved Organic Carbon			91.9		%		70-130	04-MAY-16
CL-IC-WT								
	Water							
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Chloride (Cl)		24.7	24.7		mg/L	0.1	25	05-MAY-16
WG2302725-2	LCS							
Chloride (Cl)			100.4		%		70-130	05-MAY-16
WG2302725-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	05-MAY-16
WG2302725-5	MS	L1763128-1						
Chloride (Cl)			99.7		%		70-130	05-MAY-16
CN-TOT-WT								
	Water							
Batch	R3452773							
WG2303633-3	DUP	L1763546-1						
Cyanide, Total		0.0025	0.0026		mg/L	2.3	20	05-MAY-16
WG2303633-2	LCS							
Cyanide, Total			101.1		%		80-120	05-MAY-16
WG2303633-1	MB							
Cyanide, Total			<0.0020		mg/L		0.002	05-MAY-16
WG2303633-4	MS	L1763546-1						
Cyanide, Total			97.6		%		70-130	05-MAY-16
COD-WT								
	Water							
Batch	R3451961							
WG2303258-3	DUP	L1763765-2						
COD		23	22		mg/L	4.9	20	06-MAY-16
WG2303258-2	LCS							
COD			101.4		%		85-115	06-MAY-16
WG2303258-1	MB							
COD			<10		mg/L		10	06-MAY-16
WG2303258-4	MS	L1763765-2						
COD			106.6		%		75-125	06-MAY-16
CR-CR6-IC-WT								
	Water							



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651 COLBY DRIVE
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT		Water						
Batch	R3451554							
WG2301946-4	DUP	WG2301946-3						
Chromium, Hexavalent		0.0184	0.0181		mg/L	1.8	20	04-MAY-16
WG2301946-2	LCS							
Chromium, Hexavalent			102.8		%		80-120	04-MAY-16
WG2301946-1	MB							
Chromium, Hexavalent			<0.0010		mg/L		0.001	04-MAY-16
WG2301946-5	MS	WG2301946-3						
Chromium, Hexavalent			96.2		%		70-130	04-MAY-16
EC-WT		Water						
Batch	R3450828							
WG2301443-4	DUP	WG2301443-3						
Conductivity		3430	3400		umhos/cm	0.9	10	03-MAY-16
WG2301443-2	LCS							
Conductivity			100.0		%		90-110	03-MAY-16
WG2301443-1	MB							
Conductivity			<3.0		umhos/cm		3	03-MAY-16
F-IC-N-WT		Water						
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Fluoride (F)		0.226	0.227		mg/L	0.3	20	05-MAY-16
WG2302725-2	LCS							
Fluoride (F)			101.9		%		90-110	05-MAY-16
WG2302725-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-MAY-16
WG2302725-5	MS	L1763128-1						
Fluoride (F)			98.8		%		75-125	05-MAY-16
HG-T-CVAA-WT		Water						
Batch	R3450823							
WG2301923-3	DUP	L1763136-1						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-MAY-16
WG2301923-2	LCS							
Mercury (Hg)-Total			98.1		%		80-120	04-MAY-16
WG2301923-1	MB							
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	04-MAY-16
WG2301923-4	MS	L1763136-2						
Mercury (Hg)-Total			102.0		%		70-130	04-MAY-16
MET-T-MS-WT		Water						



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 651 COLBY DRIVE
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-4	DUP	WG2301770-3						
Aluminum (Al)-Total		3.05	3.28		mg/L	7.3	20	04-MAY-16
Antimony (Sb)-Total		0.00015	0.00013		mg/L	13	20	04-MAY-16
Arsenic (As)-Total		0.00095	0.00098		mg/L	3.8	20	04-MAY-16
Barium (Ba)-Total		0.0374	0.0396		mg/L	5.8	20	04-MAY-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-MAY-16
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-MAY-16
Boron (B)-Total		0.037	0.037		mg/L	2.0	20	04-MAY-16
Cadmium (Cd)-Total		0.000051	0.000051		mg/L	1.6	20	04-MAY-16
Calcium (Ca)-Total		69.2	68.4		mg/L	1.1	20	04-MAY-16
Cobalt (Co)-Total		0.00079	0.00084		mg/L	6.1	20	04-MAY-16
Copper (Cu)-Total		0.0037	0.0041		mg/L	9.7	20	04-MAY-16
Iron (Fe)-Total		2.03	2.01		mg/L	0.7	20	04-MAY-16
Lead (Pb)-Total		0.00104	0.00103		mg/L	1.0	20	04-MAY-16
Magnesium (Mg)-Total		26.7	28.0		mg/L	4.6	20	04-MAY-16
Manganese (Mn)-Total		0.0211	0.0219		mg/L	4.0	20	04-MAY-16
Molybdenum (Mo)-Total		0.00344	0.00335		mg/L	2.6	20	04-MAY-16
Nickel (Ni)-Total		0.00343	0.00364		mg/L	6.0	20	04-MAY-16
Potassium (K)-Total		2.62	2.76		mg/L	5.2	20	04-MAY-16
Selenium (Se)-Total		0.00140	0.00126		mg/L	11	20	04-MAY-16
Silicon (Si)-Total		8.89	8.60		mg/L	3.4	20	04-MAY-16
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-MAY-16
Sodium (Na)-Total		12.0	12.5		mg/L	4.6	20	04-MAY-16
Strontium (Sr)-Total		0.214	0.210		mg/L	1.9	20	04-MAY-16
Thallium (Tl)-Total		0.000040	0.000042		mg/L	3.7	20	04-MAY-16
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-MAY-16
Vanadium (V)-Total		0.00589	0.00634		mg/L	7.4	20	04-MAY-16
Zinc (Zn)-Total		0.0097	0.0094		mg/L	4.0	20	04-MAY-16
WG2301770-2	LCS							
Aluminum (Al)-Total			98.8		%		80-120	04-MAY-16
Antimony (Sb)-Total			90.2		%		80-120	04-MAY-16
Arsenic (As)-Total			97.4		%		80-120	04-MAY-16
Barium (Ba)-Total			94.9		%		80-120	04-MAY-16
Beryllium (Be)-Total			99.1		%		80-120	04-MAY-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-2 LCS								
Bismuth (Bi)-Total			94.2		%		80-120	04-MAY-16
Boron (B)-Total			96.9		%		80-120	04-MAY-16
Cadmium (Cd)-Total			98.2		%		80-120	04-MAY-16
Calcium (Ca)-Total			96.1		%		80-120	04-MAY-16
Cobalt (Co)-Total			95.7		%		80-120	04-MAY-16
Copper (Cu)-Total			95.1		%		80-120	04-MAY-16
Iron (Fe)-Total			90.1		%		80-120	04-MAY-16
Lead (Pb)-Total			92.2		%		80-120	04-MAY-16
Magnesium (Mg)-Total			98.7		%		80-120	04-MAY-16
Manganese (Mn)-Total			96.3		%		80-120	04-MAY-16
Molybdenum (Mo)-Total			95.1		%		80-120	04-MAY-16
Nickel (Ni)-Total			95.7		%		80-120	04-MAY-16
Potassium (K)-Total			93.3		%		80-120	04-MAY-16
Selenium (Se)-Total			97.3		%		80-120	04-MAY-16
Silicon (Si)-Total			103.0		%		80-120	04-MAY-16
Silver (Ag)-Total			90.5		%		80-120	04-MAY-16
Sodium (Na)-Total			97.9		%		80-120	04-MAY-16
Strontium (Sr)-Total			90.6		%		80-120	04-MAY-16
Thallium (Tl)-Total			91.6		%		80-120	04-MAY-16
Tin (Sn)-Total			94.2		%		80-120	04-MAY-16
Vanadium (V)-Total			96.9		%		80-120	04-MAY-16
Zinc (Zn)-Total			94.0		%		80-120	04-MAY-16
WG2301770-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	04-MAY-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	04-MAY-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Boron (B)-Total			<0.010		mg/L		0.01	04-MAY-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	04-MAY-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	04-MAY-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	04-MAY-16



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 651 COLBY DRIVE
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-1	MB							
Iron (Fe)-Total			<0.050		mg/L		0.05	04-MAY-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Magnesium (Mg)-Total			<0.050		mg/L		0.05	04-MAY-16
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Potassium (K)-Total			<0.050		mg/L		0.05	04-MAY-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Silicon (Si)-Total			<0.050		mg/L		0.05	04-MAY-16
Silver (Ag)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Sodium (Na)-Total			<0.50		mg/L		0.5	04-MAY-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	04-MAY-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-MAY-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-MAY-16
WG2301770-5	MS	WG2301770-3						
Aluminum (Al)-Total			N/A	MS-B	%		-	04-MAY-16
Antimony (Sb)-Total			84.5		%		70-130	04-MAY-16
Arsenic (As)-Total			93.8		%		70-130	04-MAY-16
Barium (Ba)-Total			N/A	MS-B	%		-	04-MAY-16
Beryllium (Be)-Total			100.2		%		70-130	04-MAY-16
Bismuth (Bi)-Total			91.1		%		70-130	04-MAY-16
Boron (B)-Total			96.9		%		70-130	04-MAY-16
Cadmium (Cd)-Total			91.5		%		70-130	04-MAY-16
Calcium (Ca)-Total			N/A	MS-B	%		-	04-MAY-16
Cobalt (Co)-Total			93.7		%		70-130	04-MAY-16
Copper (Cu)-Total			89.2		%		70-130	04-MAY-16
Iron (Fe)-Total			N/A	MS-B	%		-	04-MAY-16
Lead (Pb)-Total			89.9		%		70-130	04-MAY-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-MAY-16
Manganese (Mn)-Total			N/A	MS-B	%		-	04-MAY-16
Molybdenum (Mo)-Total			97.7		%		70-130	04-MAY-16
Nickel (Ni)-Total			90.0		%		70-130	04-MAY-16



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 651 COLBY DRIVE
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-5 MS		WG2301770-3						
Potassium (K)-Total			N/A	MS-B	%		-	04-MAY-16
Selenium (Se)-Total			88.2		%		70-130	04-MAY-16
Silicon (Si)-Total			N/A	MS-B	%		-	04-MAY-16
Silver (Ag)-Total			87.9		%		70-130	04-MAY-16
Sodium (Na)-Total			N/A	MS-B	%		-	04-MAY-16
Strontium (Sr)-Total			N/A	MS-B	%		-	04-MAY-16
Thallium (Tl)-Total			89.8		%		70-130	04-MAY-16
Tin (Sn)-Total			90.1		%		70-130	06-MAY-16
Vanadium (V)-Total			95.4		%		70-130	04-MAY-16
Zinc (Zn)-Total			82.5		%		70-130	04-MAY-16
NH3-WT		Water						
Batch	R3451082							
WG2302170-7 DUP		L1763128-1						
Ammonia, Total (as N)		0.074	0.061	J	mg/L	0.014	0.04	04-MAY-16
WG2302170-6 LCS								
Ammonia, Total (as N)			112.0		%		85-115	04-MAY-16
WG2302170-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	04-MAY-16
WG2302170-8 MS		L1763128-1						
Ammonia, Total (as N)			89.7		%		75-125	04-MAY-16
NO2-IC-WT		Water						
Batch	R3452855							
WG2302725-4 DUP		L1763128-1						
Nitrite (as N)		0.021	0.022		mg/L	2.3	25	05-MAY-16
WG2302725-2 LCS								
Nitrite (as N)			99.5		%		70-130	05-MAY-16
WG2302725-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	05-MAY-16
WG2302725-5 MS		L1763128-1						
Nitrite (as N)			100.1		%		70-130	05-MAY-16
NO3-IC-WT		Water						
Batch	R3452855							
WG2302725-4 DUP		L1763128-1						
Nitrate (as N)		10.2	10.2		mg/L	0.1	25	05-MAY-16
WG2302725-2 LCS								



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT								
	Water							
Batch	R3452855							
WG2302725-2	LCS							
Nitrate (as N)			98.5		%		70-130	05-MAY-16
WG2302725-1	MB							
Nitrate (as N)			<0.020		mg/L		0.02	05-MAY-16
WG2302725-5	MS	L1763128-1						
Nitrate (as N)			N/A	MS-B	%		-	05-MAY-16
P-T-COL-WT								
	Water							
Batch	R3451947							
WG2302562-3	DUP	L1763523-1						
Phosphorus, Total		0.0254	0.0276		mg/L	8.0	20	06-MAY-16
WG2302562-2	LCS							
Phosphorus, Total			101.4		%		80-120	05-MAY-16
WG2302562-1	MB							
Phosphorus, Total			<0.0030		mg/L		0.003	06-MAY-16
WG2302562-4	MS	L1763523-1						
Phosphorus, Total			95.3		%		70-130	06-MAY-16
PH-WT								
	Water							
Batch	R3450818							
WG2301429-6	DUP	WG2301429-5						
pH		7.63	7.61	J	pH units	0.01	0.2	03-MAY-16
WG2301429-4	LCS							
pH			6.99		pH units		6.9-7.1	03-MAY-16
PHENOLS-4AAP-WT								
	Water							
Batch	R3451335							
WG2302166-3	DUP	L1762872-1						
Phenols (4AAP)		0.117	0.116		mg/L	1.2	20	04-MAY-16
WG2302166-2	LCS							
Phenols (4AAP)			99.8		%		85-115	04-MAY-16
WG2302166-1	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	04-MAY-16
WG2302166-4	MS	L1762872-1						
Phenols (4AAP)			N/A	MS-B	%		-	04-MAY-16
SO4-IC-N-WT								
	Water							
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Sulfate (SO4)		43.5	43.5		mg/L	0.0	20	05-MAY-16
WG2302725-2	LCS							



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT								
	Water							
Batch	R3452855							
WG2302725-2	LCS							
Sulfate (SO4)			101.4		%		90-110	05-MAY-16
WG2302725-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-MAY-16
WG2302725-5	MS	L1763128-1						
Sulfate (SO4)			96.6		%		75-125	05-MAY-16
SOLIDS-TDS-WT								
	Water							
Batch	R3451469							
WG2302219-3	DUP	L1762787-1						
Total Dissolved Solids		1930	1990		mg/L	2.9	20	04-MAY-16
WG2302219-2	LCS							
Total Dissolved Solids			96.6		%		85-115	04-MAY-16
WG2302219-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-MAY-16
SOLIDS-TSS-WT								
	Water							
Batch	R3452658							
WG2303175-3	DUP	L1763522-13						
Total Suspended Solids		60	62		mg/L	3.3	20	06-MAY-16
WG2303175-2	LCS							
Total Suspended Solids			98.6		%		85-115	06-MAY-16
WG2303175-1	MB							
Total Suspended Solids			<2.0		mg/L		2	06-MAY-16
TKN-WT								
	Water							
Batch	R3451928							
WG2302553-3	DUP	L1762866-1						
Total Kjeldahl Nitrogen		32.3	37.9		mg/L	16	20	05-MAY-16
WG2302553-2	LCS							
Total Kjeldahl Nitrogen			103.9		%		75-125	05-MAY-16
WG2302553-1	MB							
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	05-MAY-16
WG2302553-4	MS	L1762866-1						
Total Kjeldahl Nitrogen			110.4		%		70-130	05-MAY-16
VOC-ROU-HS-WT								
	Water							
Batch	R3450786							
WG2297762-4	DUP	WG2297762-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3450786							
WG2297762-4	DUP	WG2297762-3						
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	04-MAY-16
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	04-MAY-16
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	04-MAY-16
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	04-MAY-16
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Tetrachloroethylene		<0.50	<0.50		ug/L			04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3450786							
WG2297762-4	DUP	WG2297762-3						
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAY-16
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAY-16
WG2297762-1	LCS							
1,1,1,2-Tetrachloroethane			97.3		%		70-130	04-MAY-16
1,1,2,2-Tetrachloroethane			105.3		%		70-130	04-MAY-16
1,1,1-Trichloroethane			96.2		%		70-130	04-MAY-16
1,1,2-Trichloroethane			103.7		%		70-130	04-MAY-16
1,2-Dibromoethane			103.1		%		70-130	04-MAY-16
1,1-Dichloroethane			95.5		%		70-130	04-MAY-16
1,1-Dichloroethylene			92.3		%		70-130	04-MAY-16
1,2-Dichlorobenzene			98.4		%		70-130	04-MAY-16
1,2-Dichloroethane			105.0		%		70-130	04-MAY-16
1,2-Dichloropropane			101.8		%		70-130	04-MAY-16
1,3-Dichlorobenzene			93.6		%		70-130	04-MAY-16
1,4-Dichlorobenzene			97.3		%		70-130	04-MAY-16
Acetone			124.5		%		60-140	04-MAY-16
Benzene			97.8		%		70-130	04-MAY-16
Bromodichloromethane			98.8		%		70-130	04-MAY-16
Bromoform			100.6		%		70-130	04-MAY-16
Bromomethane			98.6		%		60-140	04-MAY-16
Carbon tetrachloride			92.3		%		70-130	04-MAY-16
Chlorobenzene			96.7		%		70-130	04-MAY-16
Chloroethane			100.9		%		70-130	04-MAY-16
Chloroform			99.0		%		70-130	04-MAY-16
cis-1,2-Dichloroethylene			99.0		%		70-130	04-MAY-16
cis-1,3-Dichloropropene			101.8		%		70-130	04-MAY-16
Dibromochloromethane			104.5		%		70-130	04-MAY-16
Dichlorodifluoromethane			95.5		%		60-140	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3450786							
WG2297762-1	LCS							
Dichloromethane			100.5		%		70-130	04-MAY-16
Ethylbenzene			97.9		%		70-130	04-MAY-16
m+p-Xylenes			99.9		%		70-130	04-MAY-16
Methyl Ethyl Ketone			116.6		%		60-140	04-MAY-16
Methyl Isobutyl Ketone			111.9		%		50-150	04-MAY-16
n-Hexane			99.0		%		70-130	04-MAY-16
MTBE			96.4		%		70-130	04-MAY-16
o-Xylene			99.7		%		70-130	04-MAY-16
Styrene			101.1		%		70-130	04-MAY-16
Tetrachloroethylene			91.2		%		70-130	04-MAY-16
Toluene			93.9		%		70-130	04-MAY-16
trans-1,2-Dichloroethylene			96.5		%		70-130	04-MAY-16
trans-1,3-Dichloropropene			92.9		%		70-130	04-MAY-16
Trichloroethylene			95.2		%		70-130	04-MAY-16
Trichlorofluoromethane			99.2		%		60-140	04-MAY-16
Vinyl chloride			101.7		%		60-140	04-MAY-16
WG2297762-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	04-MAY-16
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	04-MAY-16
1,1,1-Trichloroethane			<0.50		ug/L		0.5	04-MAY-16
1,1,2-Trichloroethane			<0.50		ug/L		0.5	04-MAY-16
1,2-Dibromoethane			<0.20		ug/L		0.2	04-MAY-16
1,1-Dichloroethane			<0.50		ug/L		0.5	04-MAY-16
1,1-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-16
1,2-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-16
1,2-Dichloroethane			<0.50		ug/L		0.5	04-MAY-16
1,2-Dichloropropane			<0.50		ug/L		0.5	04-MAY-16
1,3-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-16
1,4-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-16
Acetone			<20		ug/L		20	04-MAY-16
Benzene			<0.50		ug/L		0.5	04-MAY-16
Bromodichloromethane			<1.0		ug/L		1	04-MAY-16
Bromoform			<1.0		ug/L		1	04-MAY-16
Bromomethane			<0.50		ug/L		0.5	04-MAY-16



Quality Control Report

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3450786							
WG2297762-2 MB								
Carbon tetrachloride			<0.50		ug/L		0.5	04-MAY-16
Chlorobenzene			<0.50		ug/L		0.5	04-MAY-16
Chloroethane			<1.0		ug/L		1	04-MAY-16
Chloroform			<1.0		ug/L		1	04-MAY-16
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-16
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	04-MAY-16
Dibromochloromethane			<1.0		ug/L		1	04-MAY-16
Dichlorodifluoromethane			<1.0		ug/L		1	04-MAY-16
Dichloromethane			<2.0		ug/L		2	04-MAY-16
Ethylbenzene			<0.50		ug/L		0.5	04-MAY-16
m+p-Xylenes			<1.0		ug/L		1	04-MAY-16
Methyl Ethyl Ketone			<20		ug/L		20	04-MAY-16
Methyl Isobutyl Ketone			<20		ug/L		20	04-MAY-16
n-Hexane			<0.50		ug/L		0.5	04-MAY-16
MTBE			<0.50		ug/L		0.5	04-MAY-16
o-Xylene			<0.50		ug/L		0.5	04-MAY-16
Styrene			<0.50		ug/L		0.5	04-MAY-16
Tetrachloroethylene			<0.50		ug/L		0.5	04-MAY-16
Toluene			<0.50		ug/L		0.5	04-MAY-16
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-16
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	04-MAY-16
Trichloroethylene			<0.50		ug/L		0.5	04-MAY-16
Trichlorofluoromethane			<1.0		ug/L		1	04-MAY-16
Vinyl chloride			<0.50		ug/L		0.5	04-MAY-16
Surrogate: 1,4-Difluorobenzene			99.0		%		70-130	04-MAY-16
Surrogate: 4-Bromofluorobenzene			91.3		%		70-130	04-MAY-16

Quality Control Report

Workorder: L1763136

Report Date: 10-MAY-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



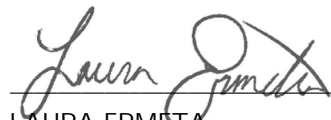
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 03-MAY-16
Report Date: 06-MAY-16 13:17 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1763123
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

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Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MICROTOX-ORG-CL	Water	Microtox Original	WCMUC (1991)
MICROTOX-PHYSICAL-CL	Water	Microtox Physical Tests	WCMUC (1991)

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:
GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1763123

Report Date: 06-MAY-16

Page 1 of 2

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MICROTOX-ORG-CL	Water							
Batch R3452202								
WG2303393-2 CRM		PHENOL_CL						
EC50 (5min) Original			13.1		mg/L		13-26	05-MAY-16
WG2303393-3 DUP		L1763123-1						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		05-MAY-16
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		05-MAY-16
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		05-MAY-16
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		05-MAY-16
WG2303393-1 MB								
EC50 (15min) Original			PASS					05-MAY-16
EC20 (15min) Original			PASS					05-MAY-16
EC50 (5min) Original			PASS					05-MAY-16
EC20 (5min) Original			PASS					05-MAY-16

Quality Control Report

Workorder: L1763123

Report Date: 06-MAY-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Page 2 of 2

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Report To		Acct#13791			Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																		
Company: GHD LIMITED		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																		
Contact: Jennifer Balkwill		Criteria on Report - provide details below if box checked			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT																		
Address: 651 Colby Drive, Waterloo, Ontario N2V 1C2		Email 1 or Fax: Jennifer.Balkwill@ghd.com			Email 2: See PO			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT																		
Phone: 519-884-7780		Specify Date Required for E2, E or P:						E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge																		
Invoice To		Invoice Distribution			Analysis Request																					
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																					
Copy of Invoice with Report <input type="checkbox"/> Yes <input type="checkbox"/> No		Email 1 or Fax: Jennifer.Balkwill@ghd.com																								
Company: GHD LIMITED		Email 2:																								
Contact: Jennifer Balkwill		Oil and Gas Required Fields (client use)																								
Project Information		Approver ID:			Cost Center:																					
ALS Quote #: 44985		GL Account:			Routing Code:																					
Job #: 44985		Activity Code:			Location:																					
PO / AFE: 73503080		ALS Contact: L.Emeta			Sampler: M. Sparks																					
LSD:																										
ALS Lab Work Order # (lab use only) <i>U7709105-3A</i>																										
ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		MICROTOX (MICROTOX-ORG-CL)		MICROTOX-PHYSICAL-CL		Number of Containers											
1		SW-44985-050316-MS-006			03-May-16		09:00		water		X X															
Drinking Water (DW) Samples¹ (client use)				Special Instructions / Specify Criteria to add on report (client Use)						SAMPLE CONDITION AS RECEIVED (lab use only)																
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Please send to ALS Calgary ASAP for analysis (short HT)						Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No										Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
										Cooling Initiated <input type="checkbox"/>																
										INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C																
										9.3 3.1																
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)						FINAL SHIPMENT RECEPTION (lab use only)																
Released by: N. Shannick		Date: May 3, 2016		Time: 13:44		Received by:		Date:		Time:		Received by: J. B. M. A. D.		Date:		Time: 13:50										



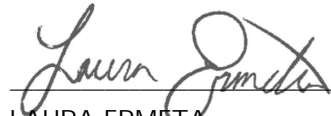
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 03-MAY-16
Report Date: 09-MAY-16 07:57 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1763128
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:



LAURA ERMETA
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763128-1 SW-44985-050316-NS-001 Sampled By: N. SHANNICK on 03-MAY-16 @ 09:25 Matrix: WATER							
Physical Tests							
Conductivity	566		3.0	umhos/cm		03-MAY-16	R3450828
Hardness (as CaCO3)	283		10	mg/L		06-MAY-16	
pH	8.12		0.10	pH units		03-MAY-16	R3450818
Total Suspended Solids	23.9		2.0	mg/L	05-MAY-16	06-MAY-16	R3452879
Total Dissolved Solids	378	DLDS	20	mg/L		04-MAY-16	R3451469
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	177		10	mg/L		05-MAY-16	R3452712
Ammonia, Total (as N)	0.074		0.020	mg/L		04-MAY-16	R3451082
Bromide (Br)	<0.10		0.10	mg/L		05-MAY-16	R3452855
Chloride (Cl)	24.7		0.50	mg/L		05-MAY-16	R3452855
Fluoride (F)	0.226		0.020	mg/L		05-MAY-16	R3452855
Nitrate (as N)	10.2		0.020	mg/L		05-MAY-16	R3452855
Nitrite (as N)	0.021		0.010	mg/L		05-MAY-16	R3452855
Total Kjeldahl Nitrogen	1.54		0.15	mg/L	05-MAY-16	05-MAY-16	R3451928
Phosphorus, Total	0.102		0.0030	mg/L	05-MAY-16	05-MAY-16	R3451947
Sulfate (SO4)	43.5		0.30	mg/L		05-MAY-16	R3452855
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		05-MAY-16	R3452773
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.6		1.0	mg/L		04-MAY-16	R3451930
Total Metals							
Aluminum (Al)-Total	3.05		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Antimony (Sb)-Total	0.00015		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Arsenic (As)-Total	0.00095		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Barium (Ba)-Total	0.0374		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451534
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Boron (B)-Total	0.037		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Cadmium (Cd)-Total	0.000051		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Calcium (Ca)-Total	69.2		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Cobalt (Co)-Total	0.00079		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Copper (Cu)-Total	0.0037		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Iron (Fe)-Total	2.03		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Lead (Pb)-Total	0.00104		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Magnesium (Mg)-Total	26.7		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Manganese (Mn)-Total	0.0211		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-MAY-16	R3450819
Molybdenum (Mo)-Total	0.00344		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Nickel (Ni)-Total	0.00343		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Potassium (K)-Total	2.62		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Selenium (Se)-Total	0.00140		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silicon (Si)-Total	8.89		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763128-1 SW-44985-050316-NS-001 Sampled By: N. SHANNICK on 03-MAY-16 @ 09:25 Matrix: WATER							
Total Metals							
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Sodium (Na)-Total	12.0		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Strontium (Sr)-Total	0.214		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Thallium (Tl)-Total	0.000040		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Vanadium (V)-Total	0.00589		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Zinc (Zn)-Total	0.0097		0.0030	mg/L	04-MAY-16	04-MAY-16	R3451534
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		04-MAY-16	R3451554
Aggregate Organics							
COD	43		10	mg/L		06-MAY-16	R3451961
Phenols (4AAP)	0.0015		0.0010	mg/L		04-MAY-16	R3451335
L1763128-2 SW-44985-050316-NS-002 Sampled By: N. SHANNICK on 03-MAY-16 @ 09:50 Matrix: WATER							
Physical Tests							
Conductivity	568		3.0	umhos/cm		03-MAY-16	R3450828
Hardness (as CaCO3)	285		10	mg/L		06-MAY-16	
pH	8.12		0.10	pH units		03-MAY-16	R3450818
Total Suspended Solids	18.7		2.0	mg/L	05-MAY-16	06-MAY-16	R3452879
Total Dissolved Solids	384	DLDS	20	mg/L		04-MAY-16	R3451469
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	176		10	mg/L		05-MAY-16	R3452712
Ammonia, Total (as N)	0.053		0.020	mg/L		04-MAY-16	R3451082
Bromide (Br)	<0.10		0.10	mg/L		05-MAY-16	R3452855
Chloride (Cl)	24.4		0.50	mg/L		05-MAY-16	R3452855
Fluoride (F)	0.216		0.020	mg/L		05-MAY-16	R3452855
Nitrate (as N)	10.1		0.020	mg/L		05-MAY-16	R3452855
Nitrite (as N)	0.021		0.010	mg/L		05-MAY-16	R3452855
Total Kjeldahl Nitrogen	1.42		0.15	mg/L	05-MAY-16	05-MAY-16	R3451928
Phosphorus, Total	0.0959		0.0030	mg/L	05-MAY-16	05-MAY-16	R3451947
Sulfate (SO4)	43.6		0.30	mg/L		05-MAY-16	R3452855
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		05-MAY-16	R3452773
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.3		1.0	mg/L		04-MAY-16	R3451930
Total Metals							
Aluminum (Al)-Total	2.82		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Antimony (Sb)-Total	0.00013		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Arsenic (As)-Total	0.00093		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Barium (Ba)-Total	0.0368		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451534
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1763128-2 SW-44985-050316-NS-002							
Sampled By: N. SHANNICK on 03-MAY-16 @ 09:50							
Matrix: WATER							
Total Metals							
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Boron (B)-Total	0.037		0.010	mg/L	04-MAY-16	04-MAY-16	R3451534
Cadmium (Cd)-Total	0.000046		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Calcium (Ca)-Total	69.6		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Cobalt (Co)-Total	0.00071		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Copper (Cu)-Total	0.0037		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Iron (Fe)-Total	1.92		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Lead (Pb)-Total	0.00097		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Magnesium (Mg)-Total	27.1		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Manganese (Mn)-Total	0.0185		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		04-MAY-16	R3450819
Molybdenum (Mo)-Total	0.00343		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Nickel (Ni)-Total	0.00329		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Potassium (K)-Total	2.53		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Selenium (Se)-Total	0.00131		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silicon (Si)-Total	8.45		0.050	mg/L	04-MAY-16	04-MAY-16	R3451534
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-MAY-16	04-MAY-16	R3451534
Sodium (Na)-Total	11.8		0.50	mg/L	04-MAY-16	04-MAY-16	R3451534
Strontium (Sr)-Total	0.215		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451534
Thallium (Tl)-Total	0.000040		0.000010	mg/L	04-MAY-16	04-MAY-16	R3451534
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-MAY-16	04-MAY-16	R3451534
Vanadium (V)-Total	0.00543		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451534
Zinc (Zn)-Total	0.0084		0.0030	mg/L	04-MAY-16	04-MAY-16	R3451534
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		04-MAY-16	R3451554
Aggregate Organics							
COD	42		10	mg/L		06-MAY-16	R3451961
Phenols (4AAP)	0.0012		0.0010	mg/L		04-MAY-16	R3451335

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Total Suspended Solids	DLHC	L1763128-1, -2
Matrix Spike	Ammonia, Total (as N)	MS-B	L1763128-1, -2
Matrix Spike	Phenols (4AAP)	MS-B	L1763128-1, -2
Matrix Spike	Aluminum (Al)-Total	MS-B	L1763128-1, -2
Matrix Spike	Barium (Ba)-Total	MS-B	L1763128-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L1763128-1, -2
Matrix Spike	Iron (Fe)-Total	MS-B	L1763128-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1763128-1, -2
Matrix Spike	Manganese (Mn)-Total	MS-B	L1763128-1, -2
Matrix Spike	Potassium (K)-Total	MS-B	L1763128-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L1763128-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L1763128-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L1763128-1, -2
Matrix Spike	Cyanide, Total	MS-B	L1763128-1, -2
Matrix Spike	Nitrate (as N)	MS-B	L1763128-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO ₃)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
C-DIS-ORG-WT	Water	Dissolved Organic Carbon Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.	APHA 5310 B-INSTRUMENTAL
CL-IC-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
CN-TOT-WT	Water	Cyanide, Total Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex. When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference	APHA 4500CN C E-STRONG ACID DIST COLORIM
COD-WT	Water	Chemical Oxygen Demand This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.	APHA 5220 D
CR-CR6-IC-WT	Water	Chromium +6 This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).	EPA 7199
EC-WT	Water	Conductivity Water samples can be measured directly by immersing the conductivity cell into the sample.	APHA 2510 B
F-IC-N-WT	Water	Fluoride in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WT Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-MS-WT Water Total Metals in Water by ICPMS EPA 200.8

This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-WT Water Ammonia, Total as N EPA 350.1

Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

NO2-IC-WT Water Nitrite in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT Water Total P in Water by Colour APHA 4500-P B E

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-T-COL-WT Water Total P in Water by Colour APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-WT Water pH APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PHENOLS-4AAP-WT Water Phenol (4AAP) EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT Water Total Dissolved Solids APHA 2540C

A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.

SOLIDS-TSS-WT Water Suspended solids APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

TKN-WT Water Total Kjeldahl Nitrogen APHA 4500-N

Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
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WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
----	-----------------------------------------------

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1763128

Report Date: 09-MAY-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT		Water						
Batch R3452712								
WG2303590-3 CRM		WT-ALK-CRM						
Alkalinity, Total (as CaCO3)			99.8		%		80-120	05-MAY-16
WG2303590-4 DUP		L1762422-1						
Alkalinity, Total (as CaCO3)		68	68		mg/L	0.2	20	05-MAY-16
WG2303590-2 LCS								
Alkalinity, Total (as CaCO3)			96.0		%		85-115	05-MAY-16
WG2303590-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	05-MAY-16
BR-IC-N-WT		Water						
Batch R3452855								
WG2302725-4 DUP		L1763128-1						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	05-MAY-16
WG2302725-2 LCS								
Bromide (Br)			96.7		%		85-115	05-MAY-16
WG2302725-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	05-MAY-16
WG2302725-5 MS		L1763128-1						
Bromide (Br)			78.9		%		75-125	05-MAY-16
C-DIS-ORG-WT		Water						
Batch R3451930								
WG2302508-3 DUP		L1762787-1						
Dissolved Organic Carbon		4.1	3.7		mg/L	12	20	04-MAY-16
WG2302508-2 LCS								
Dissolved Organic Carbon			97.8		%		80-120	04-MAY-16
WG2302508-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	04-MAY-16
WG2302508-4 MS		L1762787-1						
Dissolved Organic Carbon			91.9		%		70-130	04-MAY-16
CL-IC-WT		Water						
Batch R3452855								
WG2302725-4 DUP		L1763128-1						
Chloride (Cl)		24.7	24.7		mg/L	0.1	25	05-MAY-16
WG2302725-2 LCS								
Chloride (Cl)			100.4		%		70-130	05-MAY-16
WG2302725-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	05-MAY-16
WG2302725-5 MS		L1763128-1						



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-WT		Water						
Batch	R3452855							
WG2302725-5	MS	L1763128-1						
Chloride (Cl)			99.7		%		70-130	05-MAY-16
CN-TOT-WT		Water						
Batch	R3452773							
WG2303633-3	DUP	L1763546-1						
Cyanide, Total		0.0025	0.0026		mg/L	2.3	20	05-MAY-16
WG2303633-7	DUP	L1763766-1						
Cyanide, Total		0.45	0.44		mg/L	0.4	20	05-MAY-16
COMMENTS: DLM: Diluted due to unknown interference.								
WG2303633-2	LCS							
Cyanide, Total			101.1		%		80-120	05-MAY-16
WG2303633-6	LCS							
Cyanide, Total			103.3		%		80-120	05-MAY-16
WG2303633-1	MB							
Cyanide, Total			<0.0020		mg/L		0.002	05-MAY-16
WG2303633-5	MB							
Cyanide, Total			<0.0020		mg/L		0.002	05-MAY-16
WG2303633-4	MS	L1763546-1						
Cyanide, Total			97.6		%		70-130	05-MAY-16
WG2303633-8	MS	L1763766-1						
Cyanide, Total			N/A	MS-B	%		-	05-MAY-16
COD-WT		Water						
Batch	R3451961							
WG2303258-3	DUP	L1763765-2						
COD		23	22		mg/L	4.9	20	06-MAY-16
WG2303258-2	LCS							
COD			101.4		%		85-115	06-MAY-16
WG2303258-1	MB							
COD			<10		mg/L		10	06-MAY-16
WG2303258-4	MS	L1763765-2						
COD			106.6		%		75-125	06-MAY-16
CR-CR6-IC-WT		Water						
Batch	R3451554							
WG2301946-4	DUP	WG2301946-3						
Chromium, Hexavalent		0.0184	0.0181		mg/L	1.8	20	04-MAY-16
WG2301946-2	LCS							
Chromium, Hexavalent			102.8		%		80-120	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT		Water						
Batch	R3451554							
WG2301946-1	MB							
Chromium, Hexavalent			<0.0010		mg/L		0.001	04-MAY-16
WG2301946-5	MS	WG2301946-3						
Chromium, Hexavalent			96.2		%		70-130	04-MAY-16
EC-WT		Water						
Batch	R3450828							
WG2301443-4	DUP	WG2301443-3						
Conductivity		3430	3400		umhos/cm	0.9	10	03-MAY-16
WG2301443-2	LCS							
Conductivity			100.0		%		90-110	03-MAY-16
WG2301443-1	MB							
Conductivity			<3.0		umhos/cm		3	03-MAY-16
F-IC-N-WT		Water						
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Fluoride (F)		0.226	0.227		mg/L	0.3	20	05-MAY-16
WG2302725-2	LCS							
Fluoride (F)			101.9		%		90-110	05-MAY-16
WG2302725-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-MAY-16
WG2302725-5	MS	L1763128-1						
Fluoride (F)			98.8		%		75-125	05-MAY-16
HG-T-CVAA-WT		Water						
Batch	R3450819							
WG2301921-3	DUP	L1763128-1						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-MAY-16
WG2301921-2	LCS							
Mercury (Hg)-Total			98.4		%		80-120	04-MAY-16
WG2301921-1	MB							
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	04-MAY-16
WG2301921-4	MS	L1763128-2						
Mercury (Hg)-Total			96.6		%		70-130	04-MAY-16
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-4	DUP	WG2301770-3						
Aluminum (Al)-Total		3.05	3.28		mg/L	7.3	20	04-MAY-16
Antimony (Sb)-Total		0.00015	0.00013		mg/L	13	20	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-4	DUP	WG2301770-3						
Arsenic (As)-Total		0.00095	0.00098		mg/L	3.8	20	04-MAY-16
Barium (Ba)-Total		0.0374	0.0396		mg/L	5.8	20	04-MAY-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-MAY-16
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-MAY-16
Boron (B)-Total		0.037	0.037		mg/L	2.0	20	04-MAY-16
Cadmium (Cd)-Total		0.000051	0.000051		mg/L	1.6	20	04-MAY-16
Calcium (Ca)-Total		69.2	68.4		mg/L	1.1	20	04-MAY-16
Cobalt (Co)-Total		0.00079	0.00084		mg/L	6.1	20	04-MAY-16
Copper (Cu)-Total		0.0037	0.0041		mg/L	9.7	20	04-MAY-16
Iron (Fe)-Total		2.03	2.01		mg/L	0.7	20	04-MAY-16
Lead (Pb)-Total		0.00104	0.00103		mg/L	1.0	20	04-MAY-16
Magnesium (Mg)-Total		26.7	28.0		mg/L	4.6	20	04-MAY-16
Manganese (Mn)-Total		0.0211	0.0219		mg/L	4.0	20	04-MAY-16
Molybdenum (Mo)-Total		0.00344	0.00335		mg/L	2.6	20	04-MAY-16
Nickel (Ni)-Total		0.00343	0.00364		mg/L	6.0	20	04-MAY-16
Potassium (K)-Total		2.62	2.76		mg/L	5.2	20	04-MAY-16
Selenium (Se)-Total		0.00140	0.00126		mg/L	11	20	04-MAY-16
Silicon (Si)-Total		8.89	8.60		mg/L	3.4	20	04-MAY-16
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-MAY-16
Sodium (Na)-Total		12.0	12.5		mg/L	4.6	20	04-MAY-16
Strontium (Sr)-Total		0.214	0.210		mg/L	1.9	20	04-MAY-16
Thallium (Tl)-Total		0.000040	0.000042		mg/L	3.7	20	04-MAY-16
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-MAY-16
Vanadium (V)-Total		0.00589	0.00634		mg/L	7.4	20	04-MAY-16
Zinc (Zn)-Total		0.0097	0.0094		mg/L	4.0	20	04-MAY-16
WG2301770-2	LCS							
Aluminum (Al)-Total			98.8		%		80-120	04-MAY-16
Antimony (Sb)-Total			90.2		%		80-120	04-MAY-16
Arsenic (As)-Total			97.4		%		80-120	04-MAY-16
Barium (Ba)-Total			94.9		%		80-120	04-MAY-16
Beryllium (Be)-Total			99.1		%		80-120	04-MAY-16
Bismuth (Bi)-Total			94.2		%		80-120	04-MAY-16
Boron (B)-Total			96.9		%		80-120	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-2 LCS								
Cadmium (Cd)-Total			98.2		%		80-120	04-MAY-16
Calcium (Ca)-Total			96.1		%		80-120	04-MAY-16
Cobalt (Co)-Total			95.7		%		80-120	04-MAY-16
Copper (Cu)-Total			95.1		%		80-120	04-MAY-16
Iron (Fe)-Total			90.1		%		80-120	04-MAY-16
Lead (Pb)-Total			92.2		%		80-120	04-MAY-16
Magnesium (Mg)-Total			98.7		%		80-120	04-MAY-16
Manganese (Mn)-Total			96.3		%		80-120	04-MAY-16
Molybdenum (Mo)-Total			95.1		%		80-120	04-MAY-16
Nickel (Ni)-Total			95.7		%		80-120	04-MAY-16
Potassium (K)-Total			93.3		%		80-120	04-MAY-16
Selenium (Se)-Total			97.3		%		80-120	04-MAY-16
Silicon (Si)-Total			103.0		%		80-120	04-MAY-16
Silver (Ag)-Total			90.5		%		80-120	04-MAY-16
Sodium (Na)-Total			97.9		%		80-120	04-MAY-16
Strontium (Sr)-Total			90.6		%		80-120	04-MAY-16
Thallium (Tl)-Total			91.6		%		80-120	04-MAY-16
Tin (Sn)-Total			94.2		%		80-120	04-MAY-16
Vanadium (V)-Total			96.9		%		80-120	04-MAY-16
Zinc (Zn)-Total			94.0		%		80-120	04-MAY-16
WG2301770-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	04-MAY-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	04-MAY-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Boron (B)-Total			<0.010		mg/L		0.01	04-MAY-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	04-MAY-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	04-MAY-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	04-MAY-16
Iron (Fe)-Total			<0.050		mg/L		0.05	04-MAY-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-1 MB								
Magnesium (Mg)-Total			<0.050		mg/L		0.05	04-MAY-16
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Potassium (K)-Total			<0.050		mg/L		0.05	04-MAY-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Silicon (Si)-Total			<0.050		mg/L		0.05	04-MAY-16
Silver (Ag)-Total			<0.000050		mg/L		0.00005	04-MAY-16
Sodium (Na)-Total			<0.50		mg/L		0.5	04-MAY-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	04-MAY-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-MAY-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-MAY-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-MAY-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-MAY-16
WG2301770-5 MS		WG2301770-3						
Aluminum (Al)-Total			N/A	MS-B	%		-	04-MAY-16
Antimony (Sb)-Total			84.5		%		70-130	04-MAY-16
Arsenic (As)-Total			93.8		%		70-130	04-MAY-16
Barium (Ba)-Total			N/A	MS-B	%		-	04-MAY-16
Beryllium (Be)-Total			100.2		%		70-130	04-MAY-16
Bismuth (Bi)-Total			91.1		%		70-130	04-MAY-16
Boron (B)-Total			96.9		%		70-130	04-MAY-16
Cadmium (Cd)-Total			91.5		%		70-130	04-MAY-16
Calcium (Ca)-Total			N/A	MS-B	%		-	04-MAY-16
Cobalt (Co)-Total			93.7		%		70-130	04-MAY-16
Copper (Cu)-Total			89.2		%		70-130	04-MAY-16
Iron (Fe)-Total			N/A	MS-B	%		-	04-MAY-16
Lead (Pb)-Total			89.9		%		70-130	04-MAY-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-MAY-16
Manganese (Mn)-Total			N/A	MS-B	%		-	04-MAY-16
Molybdenum (Mo)-Total			97.7		%		70-130	04-MAY-16
Nickel (Ni)-Total			90.0		%		70-130	04-MAY-16
Potassium (K)-Total			N/A	MS-B	%		-	04-MAY-16
Selenium (Se)-Total			88.2		%		70-130	04-MAY-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3451534							
WG2301770-5 MS		WG2301770-3						
Silicon (Si)-Total			N/A	MS-B	%		-	04-MAY-16
Silver (Ag)-Total			87.9		%		70-130	04-MAY-16
Sodium (Na)-Total			N/A	MS-B	%		-	04-MAY-16
Strontium (Sr)-Total			N/A	MS-B	%		-	04-MAY-16
Thallium (Tl)-Total			89.8		%		70-130	04-MAY-16
Tin (Sn)-Total			90.1		%		70-130	06-MAY-16
Vanadium (V)-Total			95.4		%		70-130	04-MAY-16
Zinc (Zn)-Total			82.5		%		70-130	04-MAY-16
NH3-WT		Water						
Batch	R3451082							
WG2302170-7 DUP		L1763128-1						
Ammonia, Total (as N)		0.074	0.061	J	mg/L	0.014	0.04	04-MAY-16
WG2302170-6 LCS								
Ammonia, Total (as N)			112.0		%		85-115	04-MAY-16
WG2302170-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	04-MAY-16
WG2302170-8 MS		L1763128-1						
Ammonia, Total (as N)			89.7		%		75-125	04-MAY-16
NO2-IC-WT		Water						
Batch	R3452855							
WG2302725-4 DUP		L1763128-1						
Nitrite (as N)		0.021	0.022		mg/L	2.3	25	05-MAY-16
WG2302725-2 LCS								
Nitrite (as N)			99.5		%		70-130	05-MAY-16
WG2302725-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	05-MAY-16
WG2302725-5 MS		L1763128-1						
Nitrite (as N)			100.1		%		70-130	05-MAY-16
NO3-IC-WT		Water						
Batch	R3452855							
WG2302725-4 DUP		L1763128-1						
Nitrate (as N)		10.2	10.2		mg/L	0.1	25	05-MAY-16
WG2302725-2 LCS								
Nitrate (as N)			98.5		%		70-130	05-MAY-16
WG2302725-1 MB								
Nitrate (as N)			<0.020				0.02	



Quality Control Report

Workorder: L1763128

Report Date: 09-MAY-16

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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT								
	Water							
Batch	R3452855							
WG2302725-1	MB							
Nitrate (as N)			<0.020		mg/L		0.02	05-MAY-16
WG2302725-5	MS	L1763128-1						
Nitrate (as N)			N/A	MS-B	%		-	05-MAY-16
P-T-COL-WT								
	Water							
Batch	R3451947							
WG2302562-3	DUP	L1763523-1						
Phosphorus, Total		0.0254	0.0276		mg/L	8.0	20	06-MAY-16
WG2302562-2	LCS							
Phosphorus, Total			101.4		%		80-120	05-MAY-16
WG2302562-1	MB							
Phosphorus, Total			<0.0030		mg/L		0.003	06-MAY-16
WG2302562-4	MS	L1763523-1						
Phosphorus, Total			95.3		%		70-130	06-MAY-16
PH-WT								
	Water							
Batch	R3450818							
WG2301429-6	DUP	WG2301429-5						
pH		7.63	7.61	J	pH units	0.01	0.2	03-MAY-16
WG2301429-4	LCS							
pH			6.99		pH units		6.9-7.1	03-MAY-16
PHENOLS-4AAP-WT								
	Water							
Batch	R3451335							
WG2302166-3	DUP	L1762872-1						
Phenols (4AAP)		0.117	0.116		mg/L	1.2	20	04-MAY-16
WG2302166-2	LCS							
Phenols (4AAP)			99.8		%		85-115	04-MAY-16
WG2302166-1	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	04-MAY-16
WG2302166-4	MS	L1762872-1						
Phenols (4AAP)			N/A	MS-B	%		-	04-MAY-16
SO4-IC-N-WT								
	Water							
Batch	R3452855							
WG2302725-4	DUP	L1763128-1						
Sulfate (SO4)		43.5	43.5		mg/L	0.0	20	05-MAY-16
WG2302725-2	LCS							
Sulfate (SO4)			101.4		%		90-110	05-MAY-16
WG2302725-1	MB							



Quality Control Report

Workorder: L1763128

Report Date: 09-MAY-16

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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT								
	Water							
Batch	R3452855							
WG2302725-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-MAY-16
WG2302725-5	MS	L1763128-1						
Sulfate (SO4)			96.6		%		75-125	05-MAY-16
SOLIDS-TDS-WT								
	Water							
Batch	R3451469							
WG2302219-3	DUP	L1762787-1						
Total Dissolved Solids		1930	1990		mg/L	2.9	20	04-MAY-16
WG2302219-2	LCS							
Total Dissolved Solids			96.6		%		85-115	04-MAY-16
WG2302219-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-MAY-16
SOLIDS-TSS-WT								
	Water							
Batch	R3452879							
WG2302840-3	DUP	L1762900-1						
Total Suspended Solids		110	98		mg/L	12	20	06-MAY-16
WG2302840-2	LCS							
Total Suspended Solids			98.0		%		85-115	06-MAY-16
WG2302840-1	MB							
Total Suspended Solids			<2.0		mg/L		2	06-MAY-16
TKN-WT								
	Water							
Batch	R3451928							
WG2302553-3	DUP	L1762866-1						
Total Kjeldahl Nitrogen		32.3	37.9		mg/L	16	20	05-MAY-16
WG2302553-2	LCS							
Total Kjeldahl Nitrogen			103.9		%		75-125	05-MAY-16
WG2302553-1	MB							
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	05-MAY-16
WG2302553-4	MS	L1762866-1						
Total Kjeldahl Nitrogen			110.4		%		70-130	05-MAY-16

Quality Control Report

Workorder: L1763128

Report Date: 09-MAY-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



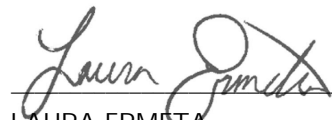
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 15-JUL-16
Report Date: 22-JUL-16 11:51 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1799019
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:



LAURA ERMETA
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-1 EQ POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Physical Tests							
Conductivity	675		3.0	umhos/cm		16-JUL-16	R3505812
Hardness (as CaCO3)	246		10	mg/L		19-JUL-16	
pH	8.43		0.10	pH units		16-JUL-16	R3505806
Total Suspended Solids	2.8		2.0	mg/L	20-JUL-16	22-JUL-16	R3509485
Total Dissolved Solids	412	DLDS	20	mg/L		19-JUL-16	R3507715
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	91		10	mg/L		16-JUL-16	R3504823
Ammonia, Total (as N)	0.628		0.020	mg/L		16-JUL-16	R3504535
Bromide (Br)	0.40		0.10	mg/L		18-JUL-16	R3506850
Chloride (Cl)	60.0		0.50	mg/L		18-JUL-16	R3506850
Fluoride (F)	0.531		0.020	mg/L		18-JUL-16	R3506850
Nitrate (as N)	<0.020		0.020	mg/L		18-JUL-16	R3506850
Nitrite (as N)	<0.010		0.010	mg/L		18-JUL-16	R3506850
Total Kjeldahl Nitrogen	0.99		0.15	mg/L	19-JUL-16	19-JUL-16	R3507099
Phosphorus, Total	0.0118		0.0030	mg/L	20-JUL-16	21-JUL-16	R3508094
Sulfate (SO4)	157		0.30	mg/L		18-JUL-16	R3506850
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		18-JUL-16	R3506599
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.4		1.0	mg/L		17-JUL-16	R3505321
Total Metals							
Aluminum (Al)-Total	0.031		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Antimony (Sb)-Total	0.00061		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Arsenic (As)-Total	0.00130		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Barium (Ba)-Total	0.0411		0.00020	mg/L	18-JUL-16	18-JUL-16	R3506276
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Boron (B)-Total	0.179		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Cadmium (Cd)-Total	0.000019		0.000010	mg/L	18-JUL-16	18-JUL-16	R3506276
Calcium (Ca)-Total	61.0		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Cobalt (Co)-Total	0.00013		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Copper (Cu)-Total	<0.0010		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Iron (Fe)-Total	<0.050		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Lead (Pb)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Magnesium (Mg)-Total	22.8		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Manganese (Mn)-Total	0.00766		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		18-JUL-16	R3505832
Molybdenum (Mo)-Total	0.0440		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Nickel (Ni)-Total	0.00236		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Potassium (K)-Total	4.11		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Selenium (Se)-Total	0.00149		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Silicon (Si)-Total	0.378		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-1 EQ POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Total Metals							
Silver (Ag)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Sodium (Na)-Total	38.6		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Strontium (Sr)-Total	0.573		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Thallium (Tl)-Total	0.000030		0.000010	mg/L	18-JUL-16	18-JUL-16	R3506276
Tin (Sn)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Vanadium (V)-Total	<0.00050		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	18-JUL-16	18-JUL-16	R3506276
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		18-JUL-16	R3506581
Aggregate Organics							
COD	20		10	mg/L		18-JUL-16	R3506231
Phenols (4AAP)	0.0037		0.0010	mg/L		18-JUL-16	R3506851
Volatile Organic Compounds							
Acetone	<20		20	ug/L		18-JUL-16	R3505874
Benzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Bromodichloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromoform	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromomethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Carbon tetrachloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
Chlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dibromochloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroform	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,2-Dibromoethane	<0.20		0.20	ug/L		18-JUL-16	R3505874
1,2-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,3-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,4-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichlorodifluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,1-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,2-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichloromethane	<2.0		2.0	ug/L		18-JUL-16	R3505874
1,2-Dichloropropane	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Ethylbenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
n-Hexane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Methyl Ethyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
Methyl Isobutyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
MTBE	<0.50		0.50	ug/L		18-JUL-16	R3505874

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-1 EQ POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Styrene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Tetrachloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Toluene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichlorofluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Vinyl chloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
o-Xylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
m+p-Xylenes	<1.0		1.0	ug/L		18-JUL-16	R3505874
Xylenes (Total)	<1.1		1.1	ug/L		18-JUL-16	
Surrogate: 4-Bromofluorobenzene	87.0		70-130	%		18-JUL-16	R3505874
Surrogate: 1,4-Difluorobenzene	98.8		70-130	%		18-JUL-16	R3505874
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		18-JUL-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3509336
Surrogate: Phenol d5	57.5		30-130	%	20-JUL-16	22-JUL-16	R3509336
Surrogate: 2,4,6-Tribromophenol	86.1		40-150	%	20-JUL-16	22-JUL-16	R3509336
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Acenaphthylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)pyrene	<0.050		0.050	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(b)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(ghi)perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(k)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
4-Chloroaniline	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Chlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Chrysene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,3-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,4-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dichlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Diethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dimethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-1 EQ POND Sampled By: CLIENT on 14-JUL-16 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dimethylphenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrophenol	<1.0		1.0	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,6-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluorene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobenzene	<0.040		0.040	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobutadiene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Naphthalene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pentachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Phenanthrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Surrogate: 2-Fluorobiphenyl	74.8		40-130	%	20-JUL-16	22-JUL-16	R3508777
Surrogate: Nitrobenzene d5	78.5		50-130	%	20-JUL-16	22-JUL-16	R3508777
Surrogate: p-Terphenyl d14	101.4		40-130	%	20-JUL-16	22-JUL-16	R3508777
L1799019-2 EAST POND Sampled By: CLIENT on 14-JUL-16 @ 11:00 Matrix: WATER							
Physical Tests							
Conductivity	665		3.0	umhos/cm		16-JUL-16	R3505812
Hardness (as CaCO3)	250		10	mg/L		19-JUL-16	
pH	8.23		0.10	pH units		16-JUL-16	R3505806
Total Suspended Solids	9.5		2.0	mg/L	20-JUL-16	22-JUL-16	R3509485
Total Dissolved Solids	388	DLDS	20	mg/L		19-JUL-16	R3507715
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	53		10	mg/L		16-JUL-16	R3504823
Ammonia, Total (as N)	1.61	DLHC	0.040	mg/L		21-JUL-16	R3509193
Bromide (Br)	1.36		0.10	mg/L		18-JUL-16	R3506850
Chloride (Cl)	42.0		0.50	mg/L		18-JUL-16	R3506850
Fluoride (F)	1.10		0.020	mg/L		18-JUL-16	R3506850
Nitrate (as N)	<0.020		0.020	mg/L		18-JUL-16	R3506850
Nitrite (as N)	<0.010		0.010	mg/L		18-JUL-16	R3506850

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-2 EAST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Anions and Nutrients							
Total Kjeldahl Nitrogen	2.12		0.15	mg/L	20-JUL-16	21-JUL-16	R3508923
Phosphorus, Total	0.0244		0.0030	mg/L	20-JUL-16	21-JUL-16	R3508094
Sulfate (SO4)	180		0.30	mg/L		18-JUL-16	R3506850
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		18-JUL-16	R3506599
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.2		1.0	mg/L		17-JUL-16	R3505321
Total Metals							
Aluminum (Al)-Total	0.377		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Antimony (Sb)-Total	0.00095		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Arsenic (As)-Total	0.00206		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Barium (Ba)-Total	0.0478		0.00020	mg/L	18-JUL-16	18-JUL-16	R3506276
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Boron (B)-Total	0.109		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Cadmium (Cd)-Total	<0.000060	DLM	0.000060	mg/L	18-JUL-16	18-JUL-16	R3506276
Calcium (Ca)-Total	65.8		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Cobalt (Co)-Total	0.00035		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Copper (Cu)-Total	0.0016		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Iron (Fe)-Total	0.311		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Lead (Pb)-Total	0.00038		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Magnesium (Mg)-Total	20.7		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Manganese (Mn)-Total	0.0146		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		18-JUL-16	R3505832
Molybdenum (Mo)-Total	0.126		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Nickel (Ni)-Total	0.00258		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Potassium (K)-Total	4.46		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Selenium (Se)-Total	0.00258		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Silicon (Si)-Total	1.50		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Silver (Ag)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Sodium (Na)-Total	32.7		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Strontium (Sr)-Total	0.580		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Thallium (Tl)-Total	0.000028		0.000010	mg/L	18-JUL-16	18-JUL-16	R3506276
Tin (Sn)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Vanadium (V)-Total	0.00120		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	18-JUL-16	18-JUL-16	R3506276
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		18-JUL-16	R3506581
Aggregate Organics							
COD	26		10	mg/L		18-JUL-16	R3506231
Phenols (4AAP)	0.0031		0.0010	mg/L		18-JUL-16	R3506851
Volatile Organic Compounds							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-2 EAST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Acetone	<20		20	ug/L		18-JUL-16	R3505874
Benzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Bromodichloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromoform	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromomethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Carbon tetrachloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
Chlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dibromochloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroform	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,2-Dibromoethane	<0.20		0.20	ug/L		18-JUL-16	R3505874
1,2-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,3-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,4-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichlorodifluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,1-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,2-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichloromethane	<2.0		2.0	ug/L		18-JUL-16	R3505874
1,2-Dichloropropane	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Ethylbenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
n-Hexane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Methyl Ethyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
Methyl Isobutyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
MTBE	<0.50		0.50	ug/L		18-JUL-16	R3505874
Styrene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Tetrachloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Toluene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichlorofluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Vinyl chloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
o-Xylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
m+p-Xylenes	<1.0		1.0	ug/L		18-JUL-16	R3505874

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-2 EAST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Xylenes (Total)	<1.1		1.1	ug/L		18-JUL-16	
Surrogate: 4-Bromofluorobenzene	87.2		70-130	%		18-JUL-16	R3505874
Surrogate: 1,4-Difluorobenzene	98.0		70-130	%		18-JUL-16	R3505874
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		18-JUL-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3509336
Surrogate: Phenol d5	53.9		30-130	%	20-JUL-16	22-JUL-16	R3509336
Surrogate: 2,4,6-Tribromophenol	88.3		40-150	%	20-JUL-16	22-JUL-16	R3509336
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Acenaphthylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)pyrene	<0.050		0.050	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(b)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(ghi)perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(k)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
4-Chloroaniline	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Chlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Chrysene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,3-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,4-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dichlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Diethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dimethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dimethylphenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrophenol	<1.0		1.0	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,6-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluorene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobenzene	<0.040		0.040	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobutadiene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-2 EAST POND Sampled By: CLIENT on 14-JUL-16 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
Naphthalene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pentachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Phenanthrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Surrogate: 2-Fluorobiphenyl	77.7		40-130	%	20-JUL-16	22-JUL-16	R3508777
Surrogate: Nitrobenzene d5	88.2		50-130	%	20-JUL-16	22-JUL-16	R3508777
Surrogate: p-Terphenyl d14	96.4		40-130	%	20-JUL-16	22-JUL-16	R3508777
Report Remarks : DLM - Cd from Mo interference							
L1799019-3 WEST POND Sampled By: CLIENT on 14-JUL-16 @ 11:00 Matrix: WATER							
Physical Tests							
Conductivity	659		3.0	umhos/cm		16-JUL-16	R3505812
Hardness (as CaCO3)	230		10	mg/L		19-JUL-16	
pH	8.44		0.10	pH units		16-JUL-16	R3505806
Total Suspended Solids	19.0		2.0	mg/L	20-JUL-16	22-JUL-16	R3509485
Total Dissolved Solids	395	DLDS	20	mg/L		19-JUL-16	R3507715
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	93		10	mg/L		16-JUL-16	R3504823
Ammonia, Total (as N)	0.538		0.020	mg/L		16-JUL-16	R3504535
Bromide (Br)	0.76		0.10	mg/L		18-JUL-16	R3506850
Chloride (Cl)	57.8		0.50	mg/L		18-JUL-16	R3506850
Fluoride (F)	0.658		0.020	mg/L		18-JUL-16	R3506850
Nitrate (as N)	<0.020		0.020	mg/L		18-JUL-16	R3506850
Nitrite (as N)	<0.010		0.010	mg/L		18-JUL-16	R3506850
Total Kjeldahl Nitrogen	1.6	DLM	1.5	mg/L	20-JUL-16	21-JUL-16	R3508923
Phosphorus, Total	0.0191		0.0030	mg/L	20-JUL-16	21-JUL-16	R3508094
Sulfate (SO4)	153		0.30	mg/L		18-JUL-16	R3506850
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		18-JUL-16	R3506599
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.1		1.0	mg/L		17-JUL-16	R3505321
Total Metals							
Aluminum (Al)-Total	0.489		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Antimony (Sb)-Total	0.00064		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Arsenic (As)-Total	0.00196		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-3 WEST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Total Metals							
Barium (Ba)-Total	0.0372		0.00020	mg/L	18-JUL-16	18-JUL-16	R3506276
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Boron (B)-Total	0.165		0.010	mg/L	18-JUL-16	18-JUL-16	R3506276
Cadmium (Cd)-Total	<0.000030	DLM	0.000030	mg/L	18-JUL-16	18-JUL-16	R3506276
Calcium (Ca)-Total	55.8		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Cobalt (Co)-Total	0.00035		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Copper (Cu)-Total	0.0014		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Iron (Fe)-Total	0.359		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Lead (Pb)-Total	0.00029		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Magnesium (Mg)-Total	22.0		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Manganese (Mn)-Total	0.0173		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Mercury (Hg)-Total	<0.000010		0.000010	mg/L	18-JUL-16	18-JUL-16	R3505832
Molybdenum (Mo)-Total	0.0642		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Nickel (Ni)-Total	0.00278		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Potassium (K)-Total	3.70		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Selenium (Se)-Total	0.00148		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Silicon (Si)-Total	1.30		0.050	mg/L	18-JUL-16	18-JUL-16	R3506276
Silver (Ag)-Total	<0.000050		0.000050	mg/L	18-JUL-16	18-JUL-16	R3506276
Sodium (Na)-Total	38.3		0.50	mg/L	18-JUL-16	18-JUL-16	R3506276
Strontium (Sr)-Total	0.489		0.0010	mg/L	18-JUL-16	18-JUL-16	R3506276
Thallium (Tl)-Total	0.000014		0.000010	mg/L	18-JUL-16	18-JUL-16	R3506276
Tin (Sn)-Total	<0.00010		0.00010	mg/L	18-JUL-16	18-JUL-16	R3506276
Vanadium (V)-Total	0.00133		0.00050	mg/L	18-JUL-16	18-JUL-16	R3506276
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	18-JUL-16	18-JUL-16	R3506276
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		18-JUL-16	R3506581
Aggregate Organics							
COD	25		10	mg/L		18-JUL-16	R3506231
Phenols (4AAP)	0.0042		0.0010	mg/L		18-JUL-16	R3506851
Volatile Organic Compounds							
Acetone	<20		20	ug/L		18-JUL-16	R3505874
Benzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Bromodichloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromoform	<1.0		1.0	ug/L		18-JUL-16	R3505874
Bromomethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Carbon tetrachloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
Chlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dibromochloromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Chloroform	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,2-Dibromoethane	<0.20		0.20	ug/L		18-JUL-16	R3505874

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-3 WEST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,3-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,4-Dichlorobenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichlorodifluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
1,1-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,2-Dichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Dichloromethane	<2.0		2.0	ug/L		18-JUL-16	R3505874
1,2-Dichloropropane	<0.50		0.50	ug/L		18-JUL-16	R3505874
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Ethylbenzene	<0.50		0.50	ug/L		18-JUL-16	R3505874
n-Hexane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Methyl Ethyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
Methyl Isobutyl Ketone	<20		20	ug/L		18-JUL-16	R3505874
MTBE	<0.50		0.50	ug/L		18-JUL-16	R3505874
Styrene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Tetrachloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Toluene	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,1-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
1,1,2-Trichloroethane	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichloroethylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
Trichlorofluoromethane	<1.0		1.0	ug/L		18-JUL-16	R3505874
Vinyl chloride	<0.50		0.50	ug/L		18-JUL-16	R3505874
o-Xylene	<0.50		0.50	ug/L		18-JUL-16	R3505874
m+p-Xylenes	<1.0		1.0	ug/L		18-JUL-16	R3505874
Xylenes (Total)	<1.1		1.1	ug/L		18-JUL-16	R3505874
Surrogate: 4-Bromofluorobenzene	86.7		70-130	%		18-JUL-16	R3505874
Surrogate: 1,4-Difluorobenzene	97.5		70-130	%		18-JUL-16	R3505874
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		18-JUL-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3509336
Surrogate: Phenol d5	62.3		30-130	%	20-JUL-16	22-JUL-16	R3509336
Surrogate: 2,4,6-Tribromophenol	98.1		40-150	%	20-JUL-16	22-JUL-16	R3509336
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Acenaphthylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-3 WEST POND							
Sampled By: CLIENT on 14-JUL-16 @ 11:00							
Matrix: WATER							
Semi-Volatile Organics							
Anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(a)pyrene	<0.050		0.050	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(b)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(ghi)perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Benzo(k)fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
4-Chloroaniline	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Chlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Chrysene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,3-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
1,4-Dichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dichlorophenol	<0.30		0.30	ug/L	20-JUL-16	22-JUL-16	R3508777
Diethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Dimethylphthalate	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dimethylphenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrophenol	<1.0		1.0	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,6-Dinitrotoluene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluoranthene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Fluorene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobenzene	<0.040		0.040	ug/L	20-JUL-16	22-JUL-16	R3508777
Hexachlorobutadiene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
1-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2-Methylnaphthalene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
Naphthalene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pentachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Perylene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Phenanthrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
Pyrene	<0.20		0.20	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	20-JUL-16	22-JUL-16	R3508777
Surrogate: 2-Fluorobiphenyl	87.9		40-130	%	20-JUL-16	22-JUL-16	R3508777

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1799019-3 WEST POND Sampled By: CLIENT on 14-JUL-16 @ 11:00 Matrix: WATER Semi-Volatile Organics Surrogate: Nitrobenzene d5 Surrogate: p-Terphenyl d14 Report Remarks : DLM - Cd from Mo interference	 95.7 111.8	 	 50-130 40-130	 % %	 20-JUL-16 20-JUL-16	 22-JUL-16 22-JUL-16	 R3508777 R3508777

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Antimony (Sb)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Arsenic (As)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Barium (Ba)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Beryllium (Be)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Bismuth (Bi)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Boron (B)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Cadmium (Cd)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Calcium (Ca)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Cobalt (Co)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Copper (Cu)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Iron (Fe)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Lead (Pb)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Magnesium (Mg)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Manganese (Mn)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Molybdenum (Mo)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Nickel (Ni)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Potassium (K)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Selenium (Se)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Silicon (Si)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Silver (Ag)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Sodium (Na)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Strontium (Sr)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Thallium (Tl)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Tin (Sn)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Vanadium (V)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Zinc (Zn)-Total	DLHC	L1799019-1, -2, -3
Duplicate	Total Suspended Solids	DLHC	L1799019-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1799019-1, -2, -3
Matrix Spike	Chloride (Cl)	MS-B	L1799019-1, -2, -3
Matrix Spike	Bromide (Br)	MS-B	L1799019-1, -2, -3
Matrix Spike	Chloride (Cl)	MS-B	L1799019-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1799019-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1799019-1, -2, -3
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1799019-1

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD.			

Reference Information

625-WT	Water	EPA 8270 Extractables	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.			
ALK-WT	Water	Alkalinity, Total (as CaCO ₃)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-WT	Water	Dissolved Organic Carbon	APHA 5310 B-INSTRUMENTAL
Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
CL-IC-WT	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
CN-TOT-WT	Water	Cyanide, Total	APHA 4500CN C E-STRONG ACID DIST COLORIM
Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COD-T-WT	Water	Chemical Oxygen Demand	APHA 5220 D
This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.			
CR-CR6-IC-WT	Water	Chromium +6	EPA 7199
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			

Reference Information

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.			
THM-SUM-PPB-CALC-WT	Water	Total Trihalomethanes (THMs)	CALCULATION
Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			
TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-N
Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.			
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260
Aqueous samples are analyzed by headspace-GC/MS.			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-ACID-EXTRA-WT		Water						
Batch	R3509336							
WG2350870-2	LCS		80.5		%		50-130	22-JUL-16
2,3,6-Trichlorophenol								
WG2350870-3	LCSD	WG2350870-2	84.3		%	4.7	50	22-JUL-16
2,3,6-Trichlorophenol								
WG2350870-1	MB		<0.50		ug/L		0.5	22-JUL-16
2,3,6-Trichlorophenol								
Surrogate: 2,4,6-Tribromophenol			68.4		%		40-150	22-JUL-16
625-WT		Water						
Batch	R3508777							
WG2350870-2	LCS		64.4		%		50-140	21-JUL-16
1-Methylnaphthalene								
1,2-Dichlorobenzene			63.3		%		40-130	21-JUL-16
1,2,4-Trichlorobenzene			61.4		%		40-130	21-JUL-16
1,3-Dichlorobenzene			59.6		%		50-140	21-JUL-16
1,4-Dichlorobenzene			61.6		%		40-130	21-JUL-16
2-Chlorophenol			70.1		%		50-140	21-JUL-16
2-Methylnaphthalene			62.4		%		50-140	21-JUL-16
2,3,4,5-Tetrachlorophenol			82.7		%		50-140	21-JUL-16
2,3,4,6-Tetrachlorophenol			88.4		%		50-140	21-JUL-16
2,4-Dichlorophenol			82.1		%		50-140	21-JUL-16
2,4-Dimethylphenol			71.7		%		50-140	21-JUL-16
2,4-Dinitrophenol			106.1		%		40-140	21-JUL-16
2,4-Dinitrotoluene			80.2		%		50-140	21-JUL-16
2,4,5-Trichlorophenol			86.0		%		50-140	21-JUL-16
2,4,6-Trichlorophenol			84.4		%		50-140	21-JUL-16
2,6-Dinitrotoluene			75.8		%		50-140	21-JUL-16
3,3'-Dichlorobenzidine			88.9		%		50-140	21-JUL-16
4-Chloroaniline			69.9		%		30-140	21-JUL-16
Acenaphthene			64.3		%		50-140	21-JUL-16
Acenaphthylene			72.6		%		50-140	21-JUL-16
Anthracene			78.5		%		50-140	21-JUL-16
Benzo(a)anthracene			90.4		%		50-140	21-JUL-16
Benzo(a)pyrene			79.5		%		60-130	21-JUL-16
Benzo(b)fluoranthene			89.7		%		50-140	21-JUL-16
Benzo(ghi)perylene			67.1		%		50-140	21-JUL-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3508777							
WG2350870-2 LCS								
Benzo(k)fluoranthene			76.7		%		50-140	21-JUL-16
Bis(2-chloroethyl)ether			62.0		%		50-140	21-JUL-16
Bis(2-ethylhexyl)phthalate			97.5		%		50-140	21-JUL-16
Chrysene			82.3		%		50-140	21-JUL-16
Dibenzo(a,h)anthracene			65.4		%		50-140	21-JUL-16
Diethylphthalate			74.0		%		50-140	21-JUL-16
Dimethylphthalate			64.3		%		50-140	21-JUL-16
Fluoranthene			84.9		%		50-140	21-JUL-16
Fluorene			60.4		%		50-140	21-JUL-16
Hexachlorobenzene			69.2		%		40-130	21-JUL-16
Hexachlorobutadiene			52.5		%		40-130	21-JUL-16
Indeno(1,2,3-cd)pyrene			70.8		%		50-140	21-JUL-16
Naphthalene			67.4		%		50-140	21-JUL-16
Pentachlorophenol			113.5		%		50-140	21-JUL-16
Perylene			73.2		%		50-140	21-JUL-16
Phenanthrene			75.6		%		50-140	21-JUL-16
Pyrene			86.1		%		50-140	21-JUL-16
WG2350870-3 LCSD		WG2350870-2						
1-Methylnaphthalene		64.4	97.8		%	41	50	21-JUL-16
1,2-Dichlorobenzene		63.3	87.9		%	33	50	21-JUL-16
1,2,4-Trichlorobenzene		61.4	86.8		%	34	50	21-JUL-16
1,3-Dichlorobenzene		59.6	85.0		%	35	50	21-JUL-16
1,4-Dichlorobenzene		61.6	85.0		%	32	50	21-JUL-16
2-Chlorophenol		70.1	101.1		%	36	50	21-JUL-16
2-Methylnaphthalene		62.4	84.7		%	30	50	21-JUL-16
2,3,4,5-Tetrachlorophenol		82.7	113.7		%	32	50	21-JUL-16
2,3,4,6-Tetrachlorophenol		88.4	112.6		%	24	50	21-JUL-16
2,4-Dichlorophenol		82.1	113.5		%	32	50	21-JUL-16
2,4-Dimethylphenol		71.7	88.1		%	21	50	21-JUL-16
2,4-Dinitrophenol		106.1	119.7		%	12	50	21-JUL-16
2,4-Dinitrotoluene		80.2	117.3		%	38	50	21-JUL-16
2,4,5-Trichlorophenol		86.0	119.0		%	32	50	21-JUL-16
2,4,6-Trichlorophenol		84.4	115.5		%	31	50	21-JUL-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT		Water						
Batch	R3508777							
WG2350870-3	LCSD	WG2350870-2						
2,6-Dinitrotoluene		75.8	110.0		%	37	50	21-JUL-16
3,3'-Dichlorobenzidine		88.9	118.6		%	29	50	21-JUL-16
4-Chloroaniline		69.9	87.9		%	23	50	21-JUL-16
Acenaphthene		64.3	98.0		%	41	50	21-JUL-16
Acenaphthylene		72.6	108.6		%	40	50	21-JUL-16
Anthracene		78.5	101.8		%	26	50	21-JUL-16
Benzo(a)anthracene		90.4	106.0		%	16	50	21-JUL-16
Benzo(a)pyrene		79.5	102.7		%	25	50	21-JUL-16
Benzo(b)fluoranthene		89.7	115.8		%	25	50	21-JUL-16
Benzo(ghi)perylene		67.1	84.2		%	23	50	21-JUL-16
Benzo(k)fluoranthene		76.7	88.4		%	14	50	21-JUL-16
Bis(2-chloroethyl)ether		62.0	87.1		%	34	50	21-JUL-16
Bis(2-ethylhexyl)phthalate		97.5	113.2		%	15	50	21-JUL-16
Chrysene		82.3	97.5		%	17	50	21-JUL-16
Dibenzo(a,h)anthracene		65.4	90.5		%	32	50	21-JUL-16
Diethylphthalate		74.0	94.9		%	25	50	21-JUL-16
Dimethylphthalate		64.3	92.8		%	36	50	21-JUL-16
Fluoranthene		84.9	99.3		%	16	50	21-JUL-16
Fluorene		60.4	87.5		%	37	50	21-JUL-16
Hexachlorobenzene		69.2	89.0		%	25	50	21-JUL-16
Hexachlorobutadiene		52.5	73.6		%	33	50	21-JUL-16
Indeno(1,2,3-cd)pyrene		70.8	89.4		%	23	50	21-JUL-16
Naphthalene		67.4	91.1		%	30	50	21-JUL-16
Pentachlorophenol		113.5	125.5		%	10	50	21-JUL-16
Perylene		73.2	88.0		%	18	50	21-JUL-16
Phenanthrene		75.6	98.1		%	26	50	21-JUL-16
Pyrene		86.1	101.8		%	17	50	21-JUL-16
WG2350870-1	MB							
1-Methylnaphthalene			<0.40		ug/L		0.4	21-JUL-16
1,2-Dichlorobenzene			<0.40		ug/L		0.4	21-JUL-16
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	21-JUL-16
1,3-Dichlorobenzene			<0.40		ug/L		0.4	21-JUL-16
1,4-Dichlorobenzene			<0.40		ug/L		0.4	21-JUL-16



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Client: GHD Limited (Waterloo)
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3508777							
WG2350870-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	21-JUL-16
2-Methylnaphthalene			<0.40		ug/L		0.4	21-JUL-16
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	21-JUL-16
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	21-JUL-16
2,4-Dichlorophenol			<0.30		ug/L		0.3	21-JUL-16
2,4-Dimethylphenol			<0.50		ug/L		0.5	21-JUL-16
2,4-Dinitrophenol			<1.0		ug/L		1	21-JUL-16
2,4-Dinitrotoluene			<0.40		ug/L		0.4	21-JUL-16
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	21-JUL-16
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	21-JUL-16
2,6-Dinitrotoluene			<0.40		ug/L		0.4	21-JUL-16
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	21-JUL-16
4-Chloroaniline			<0.40		ug/L		0.4	21-JUL-16
Acenaphthene			<0.20		ug/L		0.2	21-JUL-16
Acenaphthylene			<0.20		ug/L		0.2	21-JUL-16
Anthracene			<0.20		ug/L		0.2	21-JUL-16
Benzo(a)anthracene			<0.20		ug/L		0.2	21-JUL-16
Benzo(a)pyrene			<0.050		ug/L		0.05	21-JUL-16
Benzo(b)fluoranthene			<0.20		ug/L		0.2	21-JUL-16
Benzo(ghi)perylene			<0.20		ug/L		0.2	21-JUL-16
Benzo(k)fluoranthene			<0.20		ug/L		0.2	21-JUL-16
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	21-JUL-16
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	21-JUL-16
Chrysene			<0.20		ug/L		0.2	21-JUL-16
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	21-JUL-16
Diethylphthalate			<0.20		ug/L		0.2	21-JUL-16
Dimethylphthalate			<0.20		ug/L		0.2	21-JUL-16
Fluoranthene			<0.20		ug/L		0.2	21-JUL-16
Fluorene			<0.20		ug/L		0.2	21-JUL-16
Hexachlorobenzene			<0.040		ug/L		0.04	21-JUL-16
Hexachlorobutadiene			<0.20		ug/L		0.2	21-JUL-16
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	21-JUL-16
Naphthalene			<0.20		ug/L		0.2	21-JUL-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT Water								
Batch R3508777								
WG2350870-1 MB								
			<0.50		ug/L		0.5	21-JUL-16
			<0.20		ug/L		0.2	21-JUL-16
			<0.20		ug/L		0.2	21-JUL-16
			<0.20		ug/L		0.2	21-JUL-16
			73.2		%		40-130	21-JUL-16
			78.3		%		50-130	21-JUL-16
			89.7		%		40-130	21-JUL-16
ALK-WT Water								
Batch R3504823								
WG2348887-3 CRM WT-ALK-CRM								
			99.9		%		80-120	16-JUL-16
WG2348887-4 DUP L1795962-9								
		70	69		mg/L	1.1	20	16-JUL-16
WG2348887-2 LCS								
			106.5		%		85-115	16-JUL-16
WG2348887-1 MB								
			<10		mg/L		10	16-JUL-16
BR-IC-N-WT Water								
Batch R3506850								
WG2349434-10 DUP L1799019-1								
		0.40	0.40		mg/L	0.2	20	18-JUL-16
WG2349434-7 LCS								
			97.4		%		85-115	18-JUL-16
WG2349434-6 MB								
			<0.10		mg/L		0.1	18-JUL-16
WG2349434-9 MS L1799019-1								
			91.2		%		75-125	18-JUL-16
C-DIS-ORG-WT Water								
Batch R3505321								
WG2349254-3 DUP L1799019-3								
		6.1	6.2		mg/L	1.1	20	17-JUL-16
WG2349254-2 LCS								
			99.1		%		80-120	17-JUL-16
WG2349254-1 MB								
			<1.0		mg/L		1	17-JUL-16
WG2349254-4 MS L1799019-3								



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651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-WT								
	Water							
Batch	R3505321							
WG2349254-4	MS	L1799019-3						
	Dissolved Organic Carbon		99.5		%		70-130	17-JUL-16
CL-IC-WT								
	Water							
Batch	R3506850							
WG2349434-10	DUP	L1799019-1						
	Chloride (Cl)	60.0	60.0		mg/L	0.1	25	18-JUL-16
WG2349434-7	LCS		101.4		%		70-130	18-JUL-16
	Chloride (Cl)							
WG2349434-6	MB		<0.50		mg/L		0.5	18-JUL-16
	Chloride (Cl)							
WG2349434-9	MS	L1799019-1						
	Chloride (Cl)		89.4		%		70-130	18-JUL-16
CN-TOT-WT								
	Water							
Batch	R3506599							
WG2349592-3	DUP	L1798398-1						
	Cyanide, Total	<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-JUL-16
WG2349592-2	LCS		96.5		%		80-120	18-JUL-16
	Cyanide, Total							
WG2349592-1	MB		<0.0020		mg/L		0.002	18-JUL-16
	Cyanide, Total							
WG2349592-4	MS	L1798398-1						
	Cyanide, Total		89.8		%		70-130	18-JUL-16
COD-T-WT								
	Water							
Batch	R3506231							
WG2349930-3	DUP	L1799019-3						
	COD	25	24		mg/L	2.9	25	18-JUL-16
WG2349930-2	LCS		106.9		%		70-130	18-JUL-16
	COD							
WG2349930-1	MB		<10		mg/L		10	18-JUL-16
	COD							
WG2349930-4	MS	L1799019-3						
	COD		91.0		%		70-130	18-JUL-16
CR-CR6-IC-WT								
	Water							



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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT		Water						
Batch	R3506581							
WG2349604-4	DUP	WG2349604-3						
Chromium, Hexavalent		<0.0010	0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
WG2349604-2	LCS							
Chromium, Hexavalent			100.6		%		80-120	18-JUL-16
WG2349604-1	MB							
Chromium, Hexavalent			<0.0010		mg/L		0.001	18-JUL-16
WG2349604-5	MS	WG2349604-3						
Chromium, Hexavalent			100.5		%		70-130	18-JUL-16
EC-WT		Water						
Batch	R3505812							
WG2348855-4	DUP	WG2348855-3						
Conductivity		5190	5220		umhos/cm	0.6	10	16-JUL-16
WG2348855-2	LCS							
Conductivity			100.0		%		90-110	16-JUL-16
WG2348855-1	MB							
Conductivity			<3.0		umhos/cm		3	16-JUL-16
F-IC-N-WT		Water						
Batch	R3506850							
WG2349434-10	DUP	L1799019-1						
Fluoride (F)		0.531	0.535		mg/L	0.7	20	18-JUL-16
WG2349434-7	LCS							
Fluoride (F)			101.6		%		90-110	18-JUL-16
WG2349434-6	MB							
Fluoride (F)			<0.020		mg/L		0.02	18-JUL-16
WG2349434-9	MS	L1799019-1						
Fluoride (F)			89.6		%		75-125	18-JUL-16
HG-T-CVAA-WT		Water						
Batch	R3505832							
WG2349403-3	DUP	L1799019-1						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-JUL-16
WG2349403-2	LCS							
Mercury (Hg)-Total			101.0		%		80-120	18-JUL-16
WG2349403-1	MB							
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	18-JUL-16
WG2349403-4	MS	L1799019-2						
Mercury (Hg)-Total			99.6		%		70-130	18-JUL-16
MET-T-MS-WT		Water						



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3506276							
WG2349282-4	DUP	WG2349282-3						
Aluminum (Al)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-JUL-16
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Barium (Ba)-Total		0.0973	0.0975		mg/L	0.2	20	18-JUL-16
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JUL-16
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-JUL-16
Cadmium (Cd)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JUL-16
Calcium (Ca)-Total		222	217		mg/L	2.4	20	18-JUL-16
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Copper (Cu)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-JUL-16
Iron (Fe)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	18-JUL-16
Lead (Pb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Magnesium (Mg)-Total		83.5	80.0		mg/L	4.3	20	18-JUL-16
Manganese (Mn)-Total		0.399	0.387		mg/L	3.3	20	18-JUL-16
Molybdenum (Mo)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JUL-16
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-JUL-16
Potassium (K)-Total		13.0	12.5		mg/L	3.7	20	18-JUL-16
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JUL-16
Silicon (Si)-Total		11.7	11.3		mg/L	3.6	20	18-JUL-16
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JUL-16
Sodium (Na)-Total		1090	1050		mg/L	3.4	20	18-JUL-16
Strontium (Sr)-Total		0.774	0.767		mg/L	1.0	20	18-JUL-16
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JUL-16
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-16
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-JUL-16
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	18-JUL-16
WG2349282-2	LCS							
Aluminum (Al)-Total			100.6		%		80-120	18-JUL-16
Antimony (Sb)-Total			100.3		%		80-120	18-JUL-16
Arsenic (As)-Total			99.1		%		80-120	18-JUL-16
Barium (Ba)-Total			102.4		%		80-120	18-JUL-16
Beryllium (Be)-Total			99.8		%		80-120	18-JUL-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3506276							
WG2349282-2 LCS								
Bismuth (Bi)-Total			97.1		%		80-120	18-JUL-16
Boron (B)-Total			96.5		%		80-120	18-JUL-16
Cadmium (Cd)-Total			99.7		%		80-120	18-JUL-16
Calcium (Ca)-Total			100.6		%		80-120	18-JUL-16
Cobalt (Co)-Total			98.0		%		80-120	18-JUL-16
Copper (Cu)-Total			96.9		%		80-120	18-JUL-16
Iron (Fe)-Total			98.0		%		80-120	18-JUL-16
Lead (Pb)-Total			99.5		%		80-120	18-JUL-16
Magnesium (Mg)-Total			98.6		%		80-120	18-JUL-16
Manganese (Mn)-Total			101.6		%		80-120	18-JUL-16
Molybdenum (Mo)-Total			100.2		%		80-120	18-JUL-16
Nickel (Ni)-Total			97.3		%		80-120	18-JUL-16
Potassium (K)-Total			102.0		%		80-120	18-JUL-16
Selenium (Se)-Total			95.2		%		80-120	18-JUL-16
Silicon (Si)-Total			103.5		%		80-120	18-JUL-16
Silver (Ag)-Total			100.2		%		80-120	18-JUL-16
Sodium (Na)-Total			100.1		%		80-120	18-JUL-16
Strontium (Sr)-Total			97.9		%		80-120	18-JUL-16
Thallium (Tl)-Total			99.8		%		80-120	18-JUL-16
Tin (Sn)-Total			100.2		%		80-120	18-JUL-16
Vanadium (V)-Total			100.7		%		80-120	18-JUL-16
Zinc (Zn)-Total			91.6		%		80-120	18-JUL-16
WG2349282-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	18-JUL-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	18-JUL-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-JUL-16
Boron (B)-Total			<0.010		mg/L		0.01	18-JUL-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	18-JUL-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	18-JUL-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	18-JUL-16



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 651 COLBY DRIVE
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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT		Water						
Batch	R3506276							
WG2349282-1	MB							
Iron (Fe)-Total			<0.050		mg/L		0.05	18-JUL-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Magnesium (Mg)-Total			<0.050		mg/L		0.05	18-JUL-16
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	18-JUL-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-JUL-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-JUL-16
Potassium (K)-Total			<0.050		mg/L		0.05	18-JUL-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-JUL-16
Silicon (Si)-Total			<0.050		mg/L		0.05	18-JUL-16
Silver (Ag)-Total			<0.000050		mg/L		0.00005	18-JUL-16
Sodium (Na)-Total			<0.50		mg/L		0.5	18-JUL-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	18-JUL-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-JUL-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-JUL-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-JUL-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-JUL-16
WG2349282-5	MS	WG2349282-3						
Aluminum (Al)-Total			106.0		%		70-130	18-JUL-16
Antimony (Sb)-Total			103.0		%		70-130	18-JUL-16
Arsenic (As)-Total			100.5		%		70-130	18-JUL-16
Barium (Ba)-Total			N/A	MS-B	%		-	18-JUL-16
Beryllium (Be)-Total			103.0		%		70-130	18-JUL-16
Bismuth (Bi)-Total			88.9		%		70-130	18-JUL-16
Cadmium (Cd)-Total			98.2		%		70-130	18-JUL-16
Calcium (Ca)-Total			N/A	MS-B	%		-	18-JUL-16
Cobalt (Co)-Total			99.7		%		70-130	18-JUL-16
Copper (Cu)-Total			97.5		%		70-130	18-JUL-16
Iron (Fe)-Total			117.8		%		70-130	18-JUL-16
Lead (Pb)-Total			93.9		%		70-130	18-JUL-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	18-JUL-16
Manganese (Mn)-Total			N/A	MS-B	%		-	18-JUL-16
Molybdenum (Mo)-Total			103.1		%		70-130	18-JUL-16
Nickel (Ni)-Total			99.7		%		70-130	18-JUL-16
Potassium (K)-Total			N/A	MS-B	%		-	18-JUL-16



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651 COLBY DRIVE
WATERLOO ON N2V 1C2

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WT								
	Water							
Batch	R3506276							
WG2349282-5 MS		WG2349282-3						
Selenium (Se)-Total			92.9		%		70-130	18-JUL-16
Silicon (Si)-Total			N/A	MS-B	%		-	18-JUL-16
Silver (Ag)-Total			97.1		%		70-130	18-JUL-16
Sodium (Na)-Total			N/A	MS-B	%		-	18-JUL-16
Strontium (Sr)-Total			N/A	MS-B	%		-	18-JUL-16
Thallium (Tl)-Total			90.8		%		70-130	18-JUL-16
Tin (Sn)-Total			99.98		%		70-130	18-JUL-16
Vanadium (V)-Total			102.5		%		70-130	18-JUL-16
NH3-WT								
	Water							
Batch	R3504535							
WG2348824-3 DUP		L1799066-4						
Ammonia, Total (as N)			<0.020	RPD-NA	mg/L	N/A	20	16-JUL-16
WG2348824-2 LCS								
Ammonia, Total (as N)			94.9		%		85-115	16-JUL-16
WG2348824-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	16-JUL-16
WG2348824-4 MS		L1799066-4						
Ammonia, Total (as N)			109.5		%		75-125	16-JUL-16
Batch	R3509193							
WG2351714-16 DUP		L1801190-1						
Ammonia, Total (as N)			<0.020	RPD-NA	mg/L	N/A	20	21-JUL-16
WG2351714-14 LCS								
Ammonia, Total (as N)			102.3		%		85-115	21-JUL-16
WG2351714-13 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	21-JUL-16
WG2351714-15 MS		L1801190-1						
Ammonia, Total (as N)			94.3		%		75-125	21-JUL-16
NO2-IC-WT								
	Water							
Batch	R3506850							
WG2349434-10 DUP		L1799019-1						
Nitrite (as N)			<0.010	RPD-NA	mg/L	N/A	25	18-JUL-16
WG2349434-7 LCS								
Nitrite (as N)			99.2		%		70-130	18-JUL-16
WG2349434-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	18-JUL-16
WG2349434-9 MS		L1799019-1						



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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT								
Water								
Batch	R3506850							
WG2349434-9	MS	L1799019-1						
Nitrite (as N)			91.0		%		70-130	18-JUL-16
NO3-IC-WT								
Water								
Batch	R3506850							
WG2349434-10	DUP	L1799019-1						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	18-JUL-16
WG2349434-7	LCS							
Nitrate (as N)			100.2		%		70-130	18-JUL-16
WG2349434-6	MB							
Nitrate (as N)			<0.020		mg/L		0.02	18-JUL-16
WG2349434-9	MS	L1799019-1						
Nitrate (as N)			93.9		%		70-130	18-JUL-16
P-T-COL-WT								
Water								
Batch	R3508094							
WG2350847-3	DUP	L1798775-1						
Phosphorus, Total		0.0505	0.0553		mg/L	9.0	20	21-JUL-16
WG2350847-2	LCS							
Phosphorus, Total			100.7		%		80-120	21-JUL-16
WG2350847-1	MB							
Phosphorus, Total			<0.0030		mg/L		0.003	21-JUL-16
WG2350847-4	MS	L1798775-1						
Phosphorus, Total			79.6		%		70-130	21-JUL-16
PH-WT								
Water								
Batch	R3505806							
WG2348853-3	DUP	WG2348853-2						
pH		7.85	7.86	J	pH units	0.01	0.2	16-JUL-16
WG2348853-1	LCS							
pH			7.01		pH units		6.9-7.1	16-JUL-16
PHENOLS-4AAP-WT								
Water								
Batch	R3506851							
WG2349397-3	DUP	L1798474-1						
Phenols (4AAP)		0.0025	0.0025		mg/L	0.3	20	18-JUL-16
WG2349397-2	LCS							
Phenols (4AAP)			88.5		%		85-115	18-JUL-16
WG2349397-1	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	18-JUL-16



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651 COLBY DRIVE
WATERLOO ON N2V 1C2

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT								
Water								
Batch R3506851								
WG2349397-4	MS	L1798474-1	91.7		%		75-125	18-JUL-16
Phenols (4AAP)								
SO4-IC-N-WT								
Water								
Batch R3506850								
WG2349434-10	DUP	L1799019-1	158		mg/L	0.3	20	18-JUL-16
Sulfate (SO4)								
WG2349434-7	LCS		101.7		%		90-110	18-JUL-16
Sulfate (SO4)								
WG2349434-6	MB		<0.30		mg/L		0.3	18-JUL-16
Sulfate (SO4)								
WG2349434-9	MS	L1799019-1	N/A	MS-B	%		-	18-JUL-16
Sulfate (SO4)								
SOLIDS-TDS-WT								
Water								
Batch R3507715								
WG2350150-3	DUP	L1799400-23	1290		mg/L	1.7	20	19-JUL-16
Total Dissolved Solids								
WG2350150-2	LCS		103.9		%		85-115	19-JUL-16
Total Dissolved Solids								
WG2350150-1	MB		<10		mg/L		10	19-JUL-16
Total Dissolved Solids								
SOLIDS-TSS-WT								
Water								
Batch R3509485								
WG2351150-3	DUP	L1799157-2	958		mg/L	4.0	20	22-JUL-16
Total Suspended Solids								
WG2351150-2	LCS		98.2		%		85-115	22-JUL-16
Total Suspended Solids								
WG2351150-1	MB		<2.0		mg/L		2	22-JUL-16
Total Suspended Solids								
TKN-WT								
Water								
Batch R3507099								
WG2350003-3	DUP	WG2350003-5	251		mg/L	6.0	20	19-JUL-16
Total Kjeldahl Nitrogen								
WG2350003-2	LCS		100.8		%		75-125	19-JUL-16
Total Kjeldahl Nitrogen								
WG2350003-1	MB		<0.15		mg/L		0.15	19-JUL-16
Total Kjeldahl Nitrogen								



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 651 COLBY DRIVE
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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT								
Water								
Batch	R3507099							
WG2350003-4 MS		WG2350003-5						
Total Kjeldahl Nitrogen			N/A	MS-B	%		-	19-JUL-16
Batch	R3508923							
WG2351085-3 DUP		L1798414-1						
Total Kjeldahl Nitrogen		<1.5	<1.5	RPD-NA	mg/L	N/A	20	21-JUL-16
WG2351085-2 LCS								
Total Kjeldahl Nitrogen			103.3		%		75-125	21-JUL-16
WG2351085-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	21-JUL-16
WG2351085-4 MS		L1798414-1						
Total Kjeldahl Nitrogen			107.5		%		70-130	21-JUL-16
VOC-ROU-HS-WT								
Water								
Batch	R3505874							
WG2343204-4 DUP		WG2343204-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	18-JUL-16
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	18-JUL-16
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16



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 651 COLBY DRIVE
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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3505874							
WG2343204-4	DUP	WG2343204-3						
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	18-JUL-16
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	18-JUL-16
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	18-JUL-16
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	18-JUL-16
WG2343204-1	LCS							
1,1,1,2-Tetrachloroethane			92.5		%		70-130	18-JUL-16
1,1,2,2-Tetrachloroethane			94.2		%		70-130	18-JUL-16
1,1,1-Trichloroethane			101.7		%		70-130	18-JUL-16
1,1,2-Trichloroethane			94.3		%		70-130	18-JUL-16
1,2-Dibromoethane			89.2		%		70-130	18-JUL-16
1,1-Dichloroethane			104.3		%		70-130	18-JUL-16
1,1-Dichloroethylene			99.5		%		70-130	18-JUL-16
1,2-Dichlorobenzene			96.7		%		70-130	18-JUL-16
1,2-Dichloroethane			98.4		%		70-130	18-JUL-16
1,2-Dichloropropane			100.4		%		70-130	18-JUL-16
1,3-Dichlorobenzene			96.1		%		70-130	18-JUL-16



Quality Control Report

Workorder: L1799019

Report Date: 22-JUL-16

Page 16 of 19

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3505874							
WG2343204-1	LCS							
1,4-Dichlorobenzene			100.1		%		70-130	18-JUL-16
Acetone			103.9		%		60-140	18-JUL-16
Benzene			99.6		%		70-130	18-JUL-16
Bromodichloromethane			97.1		%		70-130	18-JUL-16
Bromoform			88.5		%		70-130	18-JUL-16
Bromomethane			103.2		%		60-140	18-JUL-16
Carbon tetrachloride			98.1		%		70-130	18-JUL-16
Chlorobenzene			96.0		%		70-130	18-JUL-16
Chloroethane			104.5		%		70-130	18-JUL-16
Chloroform			100.3		%		70-130	18-JUL-16
cis-1,2-Dichloroethylene			85.9		%		70-130	18-JUL-16
cis-1,3-Dichloropropene			100.4		%		70-130	18-JUL-16
Dibromochloromethane			94.7		%		70-130	18-JUL-16
Dichlorodifluoromethane			85.2		%		60-140	18-JUL-16
Dichloromethane			99.7		%		70-130	18-JUL-16
Ethylbenzene			90.2		%		70-130	18-JUL-16
m+p-Xylenes			96.8		%		70-130	18-JUL-16
Methyl Ethyl Ketone			94.9		%		60-140	18-JUL-16
Methyl Isobutyl Ketone			88.9		%		50-150	18-JUL-16
n-Hexane			109.6		%		70-130	18-JUL-16
MTBE			95.2		%		70-130	18-JUL-16
o-Xylene			90.3		%		70-130	18-JUL-16
Styrene			94.1		%		70-130	18-JUL-16
Tetrachloroethylene			90.5		%		70-130	18-JUL-16
Toluene			88.9		%		70-130	18-JUL-16
trans-1,2-Dichloroethylene			103.5		%		70-130	18-JUL-16
trans-1,3-Dichloropropene			93.3		%		70-130	18-JUL-16
Trichloroethylene			93.9		%		70-130	18-JUL-16
Trichlorofluoromethane			106.3		%		60-140	18-JUL-16
Vinyl chloride			100.9		%		60-140	18-JUL-16
WG2343204-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	18-JUL-16
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	18-JUL-16
1,1,1-Trichloroethane			<0.50		ug/L		0.5	18-JUL-16



Quality Control Report

Workorder: L1799019

Report Date: 22-JUL-16

Page 17 of 19

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3505874							
WG2343204-2 MB								
1,1,2-Trichloroethane			<0.50		ug/L		0.5	18-JUL-16
1,2-Dibromoethane			<0.20		ug/L		0.2	18-JUL-16
1,1-Dichloroethane			<0.50		ug/L		0.5	18-JUL-16
1,1-Dichloroethylene			<0.50		ug/L		0.5	18-JUL-16
1,2-Dichlorobenzene			<0.50		ug/L		0.5	18-JUL-16
1,2-Dichloroethane			<0.50		ug/L		0.5	18-JUL-16
1,2-Dichloropropane			<0.50		ug/L		0.5	18-JUL-16
1,3-Dichlorobenzene			<0.50		ug/L		0.5	18-JUL-16
1,4-Dichlorobenzene			<0.50		ug/L		0.5	18-JUL-16
Acetone			<20		ug/L		20	18-JUL-16
Benzene			<0.50		ug/L		0.5	18-JUL-16
Bromodichloromethane			<1.0		ug/L		1	18-JUL-16
Bromoform			<1.0		ug/L		1	18-JUL-16
Bromomethane			<0.50		ug/L		0.5	18-JUL-16
Carbon tetrachloride			<0.50		ug/L		0.5	18-JUL-16
Chlorobenzene			<0.50		ug/L		0.5	18-JUL-16
Chloroethane			<1.0		ug/L		1	18-JUL-16
Chloroform			<1.0		ug/L		1	18-JUL-16
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	18-JUL-16
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	18-JUL-16
Dibromochloromethane			<1.0		ug/L		1	18-JUL-16
Dichlorodifluoromethane			<1.0		ug/L		1	18-JUL-16
Dichloromethane			<2.0		ug/L		2	18-JUL-16
Ethylbenzene			<0.50		ug/L		0.5	18-JUL-16
m+p-Xylenes			<1.0		ug/L		1	18-JUL-16
Methyl Ethyl Ketone			<20		ug/L		20	18-JUL-16
Methyl Isobutyl Ketone			<20		ug/L		20	18-JUL-16
n-Hexane			<0.50		ug/L		0.5	18-JUL-16
MTBE			<0.50		ug/L		0.5	18-JUL-16
o-Xylene			<0.50		ug/L		0.5	18-JUL-16
Styrene			<0.50		ug/L		0.5	18-JUL-16
Tetrachloroethylene			<0.50		ug/L		0.5	18-JUL-16
Toluene			<0.50		ug/L		0.5	18-JUL-16



Quality Control Report

Workorder: L1799019

Report Date: 22-JUL-16

Page 18 of 19

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3505874							
WG2343204-2 MB								
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	18-JUL-16
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	18-JUL-16
Trichloroethylene			<0.50		ug/L		0.5	18-JUL-16
Trichlorofluoromethane			<1.0		ug/L		1	18-JUL-16
Vinyl chloride			<0.50		ug/L		0.5	18-JUL-16
Surrogate: 1,4-Difluorobenzene			98.1		%		70-130	18-JUL-16
Surrogate: 4-Bromofluorobenzene			87.9		%		70-130	18-JUL-16

Quality Control Report

Workorder: L1799019

Report Date: 22-JUL-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Page 19 of 19

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



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Report To		Acct#13791		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																																										
Company: GHD LIMITED		Contact: Jennifer Balkwill		Address: 651 Colby Drive, Waterloo, Ontario N2V 1C2		Phone: 519-884-7780		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Quality Control (QC) Report with Report: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Criteria on Report - provide details below if box checked			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			R <input type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days) P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge																													
Invoice To: Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Copy of Invoice with Report: <input type="checkbox"/> Yes <input type="checkbox"/> No		Company: GHD LIMITED		Contact: Jennifer Balkwill		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Email 1 or Fax: Jennifer.Balkwill@ghd.com			Email 2: See PO			Specify Date Required for E2, E or P:			Analysis Request																													
ALS Quote #: 44985		Job #: 44985		PO / AFE: 73503080		LSD:		Project Information			Oil and Gas Required Fields (client use)			Approver ID:			Cost Center:			GL Account:			Routing Code:			Activity Code:			Location:			ALS Contact: L.Ermeta			Sampler:			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
ALS Lab Work Order # (lab use only)		ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		MICROTOX (MICROTOX-ORG-CL)			MICROTOX (MICROTOX-PHYSICAL-CL)			Number of Containers			es listed on bottles																												
1		EQ POND		14-7-16		11:00		Gvab											14																														
2		East POND		14-7-16		11:00		Gvab											14																														
3		WEST POND		14-7-16		11:00		Gvab											14																														
Drinking Water (DW) Samples ¹ (client use)		Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Special Instructions / Specify Criteria to add on report (client Use)		Please send to ALS Calgary ASAP for analysis (short HT)		SAMPLE CONDITION AS RECEIVED (lab use only)			Frozen <input type="checkbox"/> Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/>			SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C			220																								
SHIPMENT RELEASE (client use)		Released by: Mel Sparks		Date: July 14/16		Time: 1300		INITIAL SHIPMENT RECEPTION (lab use only)		Received by: DA		Date: 15/07/16		Time: 13:45		FINAL SHIPMENT RECEPTION (lab use only)			Received by: SIF			Date: 15/07/16			Time: 13:45			DA																					



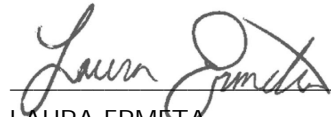
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 03-AUG-16
Report Date: 09-AUG-16 13:35 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1807445
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1807445-1 EQ POND							
Sampled By: CLIENT on 02-AUG-16 @ 08:00							
Matrix: WATER							
Microtox Physical Tests							
Turbidity	None				05-AUG-16	05-AUG-16	R3519855
Colour	Colourless				05-AUG-16	05-AUG-16	R3519855
Clarification	None				05-AUG-16	05-AUG-16	R3519855
Initial pH	7.6		0.10	pH	05-AUG-16	05-AUG-16	R3519855
Final pH	7.6		0.10	pH	05-AUG-16	05-AUG-16	R3519855
Lab Treatment	None				05-AUG-16	05-AUG-16	R3519855
Microtox Original							
EC50 (15min) Original	>100		1.0	%	05-AUG-16	05-AUG-16	R3519855
EC20 (15min) Original	>100		1.0	%	05-AUG-16	05-AUG-16	R3519855
EC50 (5min) Original	>100		1.0	%	05-AUG-16	05-AUG-16	R3519855
EC20 (5min) Original	>100		1.0	%	05-AUG-16	05-AUG-16	R3519855
Interpretation Original	NON TOXIC				05-AUG-16	05-AUG-16	R3519855

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MICROTOX-ORG-CL	Water	Microtox Original	WCMUC (1991)
MICROTOX-PHYSICAL-CL	Water	Microtox Physical Tests	WCMUC (1991)

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:
GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1807445

Report Date: 09-AUG-16

Page 1 of 2

Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MICROTOX-ORG-CL								
	Water							
Batch	R3519855							
WG2362242-2 CRM		PHENOL_CL						
EC50 (5min) Original			15.6		mg/L		13-26	05-AUG-16
WG2362242-3 CRM		PHENOL_CL						
EC50 (5min) Original			14.2		mg/L		13-26	05-AUG-16
WG2362242-4 DUP		L1807445-1						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		05-AUG-16
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		05-AUG-16
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		05-AUG-16
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		05-AUG-16
WG2362242-1 MB								
EC50 (15min) Original			PASS					05-AUG-16
EC20 (15min) Original			PASS					05-AUG-16
EC50 (5min) Original			PASS					05-AUG-16
EC20 (5min) Original			PASS					05-AUG-16

Quality Control Report

Workorder: L1807445

Report Date: 09-AUG-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Page 2 of 2

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L1807445-COFC

Report To		Report Form		* (Rush Turnaround Time (TAT) is not available for all tests)	
Company: GHD Limited Acct # 13791		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		R <input type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)	
Contact: Jennifer Balkwill		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT	
Address: 651 Colby Drive, Waterloo, Ontario N2V 1C2		<input type="checkbox"/> Criteria on Report - provide details below if box checked		E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT	
Phone: 519-884-7800		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge	
		Email 1 or Fax: Jennifer.Balkwill@ghd.com		Specify Date Required for E2, E or P:	
		Email 2: Erica Carabott, Clean Harbour Inc		Analysis Request	
Invoice To: Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Copy of Invoice with Report <input type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			
Company: GHD Limited		Email 1 or Fax: Jennifer.Balkwill@ghd.com			
Contact: Jennifer Balkwill		Email 2:			
Project Information		Oil and Gas Required: Fields (client use)			
ALS Quote #:		Approver ID:		Cost Center:	
Job #: 44985		GL Account:		Routing Code:	
PO / AFE: 73503080		Activity Code:			
LSD:		Location:			
ALS Lab Work Order # (lab use only)		ALS Contact:		Sampler:	
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	EQ POND	02-08-16	08:00	Grab	2
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report (client Use)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Please send to ALS CALGARY ASAP for analysis (short HT)		Frozen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
SHIPPING RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: Ray Tobin Date: August 16 Time:		Received by: Don Date: 8/16 Time: 9:40		Received by: Date: Time:	

Microtox

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-11102 Rev 03 Form 01 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



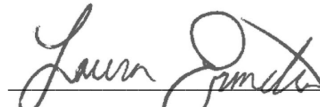
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 26-AUG-16
Report Date: 06-SEP-16 14:22 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1819999
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-1 SW-44985-082616-MS-001 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Field Tests							
Temperature, Client	25.0		-50	Deg. C		29-AUG-16	R3536126
Physical Tests							
Conductivity	588		3.0	umhos/cm		30-AUG-16	R3537438
Hardness (as CaCO3)	222	HTC	10	mg/L		30-AUG-16	
pH	8.23		0.10	pH units		30-AUG-16	R3537437
Total Suspended Solids	2.5		2.0	mg/L	01-SEP-16	02-SEP-16	R3539673
Total Dissolved Solids	365	DLDS	20	mg/L		29-AUG-16	R3536840
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	107		10	mg/L		30-AUG-16	R3537367
Unionized ammonia	0.0201		0.0020	mg/L		31-AUG-16	
Ammonia, Total (as N)	0.188		0.020	mg/L		30-AUG-16	R3537009
Bromide (Br)	0.76		0.10	mg/L		30-AUG-16	R3537924
Chloride (Cl)	41.7		0.50	mg/L		30-AUG-16	R3537924
Fluoride (F)	0.699		0.020	mg/L		30-AUG-16	R3537924
Nitrate (as N)	<0.020		0.020	mg/L		30-AUG-16	R3537924
Nitrite (as N)	<0.010		0.010	mg/L		30-AUG-16	R3537924
Total Kjeldahl Nitrogen	0.50		0.15	mg/L	31-AUG-16	31-AUG-16	R3538254
Phosphorus, Total	0.0142		0.0030	mg/L	30-AUG-16	30-AUG-16	R3536568
Sulfate (SO4)	123		0.30	mg/L		30-AUG-16	R3537924
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		31-AUG-16	R3538403
Organic / Inorganic Carbon							
Dissolved Organic Carbon	3.8		1.0	mg/L		29-AUG-16	R3537355
Total Metals							
Aluminum (Al)-Total	0.053		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Antimony (Sb)-Total	0.00055		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Arsenic (As)-Total	0.00216		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Barium (Ba)-Total	0.0388		0.00020	mg/L	28-AUG-16	29-AUG-16	R3536295
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Boron (B)-Total	0.128		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Cadmium (Cd)-Total	0.000022		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Calcium (Ca)-Total	59.9		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Cobalt (Co)-Total	0.00013		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Copper (Cu)-Total	<0.0010		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Iron (Fe)-Total	<0.050		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Lead (Pb)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Magnesium (Mg)-Total	17.5		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Manganese (Mn)-Total	0.0342		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		30-AUG-16	R3536947
Molybdenum (Mo)-Total	0.0653		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Nickel (Ni)-Total	0.00200		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-1 SW-44985-082616-MS-001							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Total Metals							
Potassium (K)-Total	3.63		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Selenium (Se)-Total	0.00115		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silicon (Si)-Total	0.892		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silver (Ag)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Sodium (Na)-Total	29.1		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Strontium (Sr)-Total	0.517		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Thallium (Tl)-Total	<0.000020	DLUI	0.000020	mg/L	28-AUG-16	29-AUG-16	R3536295
Tin (Sn)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Vanadium (V)-Total	0.00056		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	28-AUG-16	29-AUG-16	R3536295
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		30-AUG-16	R3537487
Aggregate Organics							
COD	13		10	mg/L		30-AUG-16	R3537425
Phenols (4AAP)	0.0031		0.0010	mg/L		31-AUG-16	R3538399
Volatile Organic Compounds							
Acetone	<20		20	ug/L		30-AUG-16	R3537011
Benzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Bromodichloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromoform	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromomethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Carbon tetrachloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
Chlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dibromochloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroform	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,2-Dibromoethane	<0.20		0.20	ug/L		30-AUG-16	R3537011
1,2-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,3-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,4-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichlorodifluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,1-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,2-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichloromethane	<2.0		2.0	ug/L		30-AUG-16	R3537011
1,2-Dichloropropane	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Ethylbenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
n-Hexane	<0.50		0.50	ug/L		30-AUG-16	R3537011

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-1 SW-44985-082616-MS-001							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
Methyl Isobutyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
MTBE	<0.50		0.50	ug/L		30-AUG-16	R3537011
Styrene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Tetrachloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Toluene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,2-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Trichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Trichlorofluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Vinyl chloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
o-Xylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
m+p-Xylenes	<1.0		1.0	ug/L		30-AUG-16	R3537011
Xylenes (Total)	<1.1		1.1	ug/L		30-AUG-16	R3537011
Surrogate: 4-Bromofluorobenzene	97.4		70-130	%		30-AUG-16	R3537011
Surrogate: 1,4-Difluorobenzene	101.7		70-130	%		30-AUG-16	R3537011
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		30-AUG-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2,4,6-Tribromophenol	115.9		40-150	%	31-AUG-16	02-SEP-16	R3538635
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Acenaphthylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)pyrene	<0.050		0.050	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(b)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(ghi)perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(k)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
4-Chloroaniline	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Chlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635
Chrysene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,3-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,4-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dichlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-1 SW-44985-082616-MS-001 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
Diethylphthalate	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dimethylphthalate	0.32		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dimethylphenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrophenol	<1.0		1.0	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,6-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-ethylhexyl)phthalate	12	DLHC	10	ug/L	31-AUG-16	06-SEP-16	R3538635
Fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Fluorene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Hexachlorobenzene	<0.040		0.040	ug/L	31-AUG-16	02-SEP-16	R3538635
Hexachlorobutadiene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Naphthalene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pentachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Phenanthrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2-Fluorobiphenyl	81.4		40-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: Nitrobenzene d5	88.5		50-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: p-Terphenyl d14	116.3		40-130	%	31-AUG-16	02-SEP-16	R3538635
L1819999-2 SW-44985-082616-MS-002 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Field Tests							
Temperature, Client	25.0		-50	Deg. C		29-AUG-16	R3536126
Physical Tests							
Conductivity	575		3.0	umhos/cm		30-AUG-16	R3537438
Hardness (as CaCO3)	220	HTC	10	mg/L		30-AUG-16	
pH	8.03		0.10	pH units		30-AUG-16	R3537437
Total Suspended Solids	19.8		2.0	mg/L	01-SEP-16	02-SEP-16	R3539673
Total Dissolved Solids	364	DLDS	20	mg/L		29-AUG-16	R3536840
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	108		10	mg/L		30-AUG-16	R3537367
Unionized ammonia	0.0496		0.0010	mg/L		31-AUG-16	
Ammonia, Total (as N)	0.713		0.020	mg/L		30-AUG-16	R3537009

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-2 SW-44985-082616-MS-002							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Anions and Nutrients							
Bromide (Br)	0.71		0.10	mg/L		30-AUG-16	R3537924
Chloride (Cl)	38.8		0.50	mg/L		30-AUG-16	R3537924
Fluoride (F)	0.747		0.020	mg/L		30-AUG-16	R3537924
Nitrate (as N)	0.025		0.020	mg/L		30-AUG-16	R3537924
Nitrite (as N)	<0.010		0.010	mg/L		30-AUG-16	R3537924
Total Kjeldahl Nitrogen	1.18		0.15	mg/L	31-AUG-16	31-AUG-16	R3538254
Phosphorus, Total	0.0365		0.0030	mg/L	30-AUG-16	30-AUG-16	R3536568
Sulfate (SO4)	123		0.30	mg/L		30-AUG-16	R3537924
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		31-AUG-16	R3538403
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.3		1.0	mg/L		29-AUG-16	R3537355
Total Metals							
Aluminum (Al)-Total	0.770		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Antimony (Sb)-Total	0.00056		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Arsenic (As)-Total	0.00279		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Barium (Ba)-Total	0.0432		0.00020	mg/L	28-AUG-16	29-AUG-16	R3536295
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Boron (B)-Total	0.137		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Cadmium (Cd)-Total	0.000036		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Calcium (Ca)-Total	60.9		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Cobalt (Co)-Total	0.00051		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Copper (Cu)-Total	0.0016		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Iron (Fe)-Total	0.874		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Lead (Pb)-Total	0.00065		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Magnesium (Mg)-Total	16.6		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Manganese (Mn)-Total	0.0639		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		30-AUG-16	R3536947
Molybdenum (Mo)-Total	0.0654		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Nickel (Ni)-Total	0.00313		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Potassium (K)-Total	3.72		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Selenium (Se)-Total	0.00127		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silicon (Si)-Total	2.23		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silver (Ag)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Sodium (Na)-Total	26.6		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Strontium (Sr)-Total	0.516		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Thallium (Tl)-Total	<0.000030	DLUI	0.000030	mg/L	28-AUG-16	29-AUG-16	R3536295
Tin (Sn)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Vanadium (V)-Total	0.00195		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Zinc (Zn)-Total	0.0155		0.0030	mg/L	28-AUG-16	29-AUG-16	R3536295
Speciated Metals							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-2 SW-44985-082616-MS-002 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		30-AUG-16	R3537487
Aggregate Organics							
COD	21		10	mg/L		30-AUG-16	R3537425
Phenols (4AAP)	0.0061		0.0010	mg/L		31-AUG-16	R3538399
Volatile Organic Compounds							
Acetone	<20		20	ug/L		30-AUG-16	R3537011
Benzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Bromodichloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromoform	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromomethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Carbon tetrachloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
Chlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dibromochloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroform	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,2-Dibromoethane	<0.20		0.20	ug/L		30-AUG-16	R3537011
1,2-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,3-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,4-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichlorodifluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,1-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,2-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichloromethane	<2.0		2.0	ug/L		30-AUG-16	R3537011
1,2-Dichloropropane	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Ethylbenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
n-Hexane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Methyl Ethyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
Methyl Isobutyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
MTBE	<0.50		0.50	ug/L		30-AUG-16	R3537011
Styrene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Tetrachloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Toluene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,2-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-2 SW-44985-082616-MS-002							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Trichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Trichlorofluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Vinyl chloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
o-Xylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
m+p-Xylenes	<1.0		1.0	ug/L		30-AUG-16	R3537011
Xylenes (Total)	<1.1		1.1	ug/L		30-AUG-16	
Surrogate: 4-Bromofluorobenzene	93.9		70-130	%		30-AUG-16	R3537011
Surrogate: 1,4-Difluorobenzene	100.7		70-130	%		30-AUG-16	R3537011
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		30-AUG-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2,4,6-Tribromophenol	119.5		40-150	%	31-AUG-16	02-SEP-16	R3538635
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Acenaphthylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)pyrene	<0.050		0.050	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(b)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(ghi)perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(k)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
4-Chloroaniline	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Chlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635
Chrysene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,3-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,4-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dichlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635
Diethylphthalate	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dimethylphthalate	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dimethylphenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrophenol	<1.0		1.0	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,6-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	31-AUG-16	02-SEP-16	R3538635
Fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Fluorene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Hexachlorobenzene	<0.040		0.040	ug/L	31-AUG-16	02-SEP-16	R3538635

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-2 SW-44985-082616-MS-002 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
Hexachlorobutadiene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Naphthalene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pentachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Phenanthrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2-Fluorobiphenyl	84.0		40-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: Nitrobenzene d5	92.9		50-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: p-Terphenyl d14	101.0		40-130	%	31-AUG-16	02-SEP-16	R3538635
L1819999-3 SW-44985-082616-MS-003 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Field Tests							
Temperature, Client	25.0		-50	Deg. C		29-AUG-16	R3536126
Physical Tests							
Conductivity	534		3.0	umhos/cm		30-AUG-16	R3537438
Hardness (as CaCO3)	210	HTC	10	mg/L		30-AUG-16	
pH	8.22		0.10	pH units		30-AUG-16	R3537437
Total Suspended Solids	11.4		2.0	mg/L	01-SEP-16	02-SEP-16	R3539673
Total Dissolved Solids	343	DLDS	20	mg/L		29-AUG-16	R3536840
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	95		10	mg/L		30-AUG-16	R3537367
Unionized ammonia	0.309		0.0090	mg/L		31-AUG-16	
Ammonia, Total (as N)	2.93	DLHC	0.10	mg/L		30-AUG-16	R3537009
Bromide (Br)	0.78		0.10	mg/L		30-AUG-16	R3537924
Chloride (Cl)	25.5		0.50	mg/L		30-AUG-16	R3537924
Fluoride (F)	0.816		0.020	mg/L		30-AUG-16	R3537924
Nitrate (as N)	<0.020		0.020	mg/L		30-AUG-16	R3537924
Nitrite (as N)	<0.010		0.010	mg/L		30-AUG-16	R3537924
Total Kjeldahl Nitrogen	2.76		0.15	mg/L	31-AUG-16	31-AUG-16	R3538254
Phosphorus, Total	0.0223		0.0030	mg/L	30-AUG-16	30-AUG-16	R3536568
Sulfate (SO4)	135		0.30	mg/L		30-AUG-16	R3537924
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		31-AUG-16	R3538403

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-3 SW-44985-082616-MS-003 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Cyanides							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.7		1.0	mg/L		29-AUG-16	R3537355
Total Metals							
Aluminum (Al)-Total	0.318		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Antimony (Sb)-Total	0.00056		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Arsenic (As)-Total	0.00206		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Barium (Ba)-Total	0.0431		0.00020	mg/L	28-AUG-16	29-AUG-16	R3536295
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Boron (B)-Total	0.094		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Cadmium (Cd)-Total	0.000045		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Calcium (Ca)-Total	59.6		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Cobalt (Co)-Total	0.00028		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Copper (Cu)-Total	0.0017		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Iron (Fe)-Total	0.351		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Lead (Pb)-Total	0.00035		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Magnesium (Mg)-Total	14.9		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Manganese (Mn)-Total	0.0174		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		30-AUG-16	R3536947
Molybdenum (Mo)-Total	0.0780		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Nickel (Ni)-Total	0.00205		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Potassium (K)-Total	3.95		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Selenium (Se)-Total	0.00240		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silicon (Si)-Total	1.59		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silver (Ag)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Sodium (Na)-Total	21.0		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Strontium (Sr)-Total	0.567		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Thallium (Tl)-Total	<0.000030	DLUI	0.000030	mg/L	28-AUG-16	29-AUG-16	R3536295
Tin (Sn)-Total	<0.00010		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Vanadium (V)-Total	0.00105		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	28-AUG-16	29-AUG-16	R3536295
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		30-AUG-16	R3537487
Aggregate Organics							
COD	25		10	mg/L		30-AUG-16	R3537425
Phenols (4AAP)	0.0025		0.0010	mg/L		31-AUG-16	R3538399
Volatile Organic Compounds							
Acetone	<20		20	ug/L		30-AUG-16	R3537011
Benzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Bromodichloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromoform	<1.0		1.0	ug/L		30-AUG-16	R3537011
Bromomethane	<0.50		0.50	ug/L		30-AUG-16	R3537011

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-3 SW-44985-082616-MS-003							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Volatile Organic Compounds							
Carbon tetrachloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
Chlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dibromochloromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Chloroform	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,2-Dibromoethane	<0.20		0.20	ug/L		30-AUG-16	R3537011
1,2-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,3-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,4-Dichlorobenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichlorodifluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
1,1-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,2-Dichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Dichloromethane	<2.0		2.0	ug/L		30-AUG-16	R3537011
1,2-Dichloropropane	<0.50		0.50	ug/L		30-AUG-16	R3537011
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Ethylbenzene	<0.50		0.50	ug/L		30-AUG-16	R3537011
n-Hexane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Methyl Ethyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
Methyl Isobutyl Ketone	<20		20	ug/L		30-AUG-16	R3537011
MTBE	<0.50		0.50	ug/L		30-AUG-16	R3537011
Styrene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Tetrachloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Toluene	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,1-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
1,1,2-Trichloroethane	<0.50		0.50	ug/L		30-AUG-16	R3537011
Trichloroethylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
Trichlorofluoromethane	<1.0		1.0	ug/L		30-AUG-16	R3537011
Vinyl chloride	<0.50		0.50	ug/L		30-AUG-16	R3537011
o-Xylene	<0.50		0.50	ug/L		30-AUG-16	R3537011
m+p-Xylenes	<1.0		1.0	ug/L		30-AUG-16	R3537011
Xylenes (Total)	<1.1		1.1	ug/L		30-AUG-16	R3537011
Surrogate: 4-Bromofluorobenzene	93.9		70-130	%		30-AUG-16	R3537011
Surrogate: 1,4-Difluorobenzene	100.4		70-130	%		30-AUG-16	R3537011
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		30-AUG-16	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-3 SW-44985-082616-MS-003							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00							
Matrix: WATER							
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2,4,6-Tribromophenol	130.1		40-150	%	31-AUG-16	02-SEP-16	R3538635
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Acenaphthylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(a)pyrene	<0.050		0.050	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(b)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(ghi)perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Benzo(k)fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
4-Chloroaniline	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Chlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635
Chrysene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,3-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
1,4-Dichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dichlorophenol	<0.30		0.30	ug/L	31-AUG-16	02-SEP-16	R3538635
Diethylphthalate	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Dimethylphthalate	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dimethylphenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrophenol	<1.0		1.0	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,6-Dinitrotoluene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	31-AUG-16	02-SEP-16	R3538635
Fluoranthene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Fluorene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Hexachlorobenzene	<0.040		0.040	ug/L	31-AUG-16	02-SEP-16	R3538635
Hexachlorobutadiene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
1-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2-Methylnaphthalene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
Naphthalene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pentachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Perylene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Phenanthrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
Pyrene	<0.20		0.20	ug/L	31-AUG-16	02-SEP-16	R3538635
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-3 SW-44985-082616-MS-003 Sampled By: M.S. / N.S. on 26-AUG-16 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	31-AUG-16	02-SEP-16	R3538635
Surrogate: 2-Fluorobiphenyl	85.8		40-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: Nitrobenzene d5	95.8		50-130	%	31-AUG-16	02-SEP-16	R3538635
Surrogate: p-Terphenyl d14	97.4		40-130	%	31-AUG-16	02-SEP-16	R3538635
L1819999-4 SW-44985-082616-MS-004 Sampled By: M.S. / N.S. on 26-AUG-16 @ 13:00 Matrix: WATER							
Field Tests							
Temperature, Client	25.0		-50	Deg. C		29-AUG-16	R3536126
Physical Tests							
Conductivity	543		3.0	umhos/cm		30-AUG-16	R3537438
Hardness (as CaCO3)	239	HTC	10	mg/L		30-AUG-16	
pH	8.08		0.10	pH units		30-AUG-16	R3537437
Total Suspended Solids	35.6		2.0	mg/L	01-SEP-16	02-SEP-16	R3539686
Total Dissolved Solids	384	DLDS	20	mg/L		29-AUG-16	R3536840
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	197		10	mg/L		30-AUG-16	R3537367
Unionized ammonia	0.219		0.0060	mg/L		01-SEP-16	
Ammonia, Total (as N)	2.82	DLHC	0.10	mg/L		01-SEP-16	R3538710
Bromide (Br)	<0.10		0.10	mg/L		30-AUG-16	R3537924
Chloride (Cl)	34.9		0.50	mg/L		30-AUG-16	R3537924
Fluoride (F)	0.243		0.020	mg/L		30-AUG-16	R3537924
Nitrate (as N)	1.89		0.020	mg/L		30-AUG-16	R3537924
Nitrite (as N)	0.026		0.010	mg/L		30-AUG-16	R3537924
Total Kjeldahl Nitrogen	3.70		0.15	mg/L	31-AUG-16	31-AUG-16	R3538254
Phosphorus, Total	0.699		0.0030	mg/L	30-AUG-16	30-AUG-16	R3536568
Sulfate (SO4)	32.2		0.30	mg/L		30-AUG-16	R3537924
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		31-AUG-16	R3538403
Organic / Inorganic Carbon							
Dissolved Organic Carbon	14.9		1.0	mg/L		29-AUG-16	R3537355
Total Metals							
Aluminum (Al)-Total	3.04		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Antimony (Sb)-Total	0.00023		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Arsenic (As)-Total	0.00262		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Barium (Ba)-Total	0.0460		0.00020	mg/L	28-AUG-16	29-AUG-16	R3536295
Beryllium (Be)-Total	0.00012		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Boron (B)-Total	0.063		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-4 SW-44985-082616-MS-004 Sampled By: M.S. / N.S. on 26-AUG-16 @ 13:00 Matrix: WATER							
Total Metals							
Cadmium (Cd)-Total	0.000075		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Calcium (Ca)-Total	62.7		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Cobalt (Co)-Total	0.00117		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Copper (Cu)-Total	0.0059		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Iron (Fe)-Total	2.83		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Lead (Pb)-Total	0.00157		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Magnesium (Mg)-Total	19.9		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Manganese (Mn)-Total	0.0386		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		30-AUG-16	R3536947
Molybdenum (Mo)-Total	0.00733		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Nickel (Ni)-Total	0.00554		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Potassium (K)-Total	6.00		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Selenium (Se)-Total	0.000923		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silicon (Si)-Total	11.6		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silver (Ag)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Sodium (Na)-Total	16.1		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Strontium (Sr)-Total	0.222		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Thallium (Tl)-Total	0.000054		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Tin (Sn)-Total	0.00015		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Vanadium (V)-Total	0.00682		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Zinc (Zn)-Total	0.0156		0.0030	mg/L	28-AUG-16	29-AUG-16	R3536295
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		30-AUG-16	R3537487
Aggregate Organics							
COD	59		10	mg/L		30-AUG-16	R3537425
Phenols (4AAP)	0.0026		0.0010	mg/L		31-AUG-16	R3538399
L1819999-5 SW-44985-082616-MS-005 Sampled By: M.S. / N.S. on 26-AUG-16 @ 13:15 Matrix: WATER							
Field Tests							
Temperature, Client	25.0		-50	Deg. C		29-AUG-16	R3536126
Physical Tests							
Conductivity	540		3.0	umhos/cm		30-AUG-16	R3537438
Hardness (as CaCO3)	238	HTC	10	mg/L		30-AUG-16	
pH	8.12		0.10	pH units		30-AUG-16	R3537437
Total Suspended Solids	39.2		2.0	mg/L	01-SEP-16	02-SEP-16	R3539686
Total Dissolved Solids	356	DLDS	20	mg/L		31-AUG-16	R3540735
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	199		10	mg/L		30-AUG-16	R3537367
Unionized ammonia	0.562		0.010	mg/L		31-AUG-16	
Ammonia, Total (as N)	6.60	DLHC	0.20	mg/L		30-AUG-16	R3537009
Bromide (Br)	<0.10		0.10	mg/L		30-AUG-16	R3537924

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-5 SW-44985-082616-MS-005							
Sampled By: M.S. / N.S. on 26-AUG-16 @ 13:15							
Matrix: WATER							
Anions and Nutrients							
Chloride (Cl)	34.2		0.50	mg/L		30-AUG-16	R3537924
Fluoride (F)	0.234		0.020	mg/L		30-AUG-16	R3537924
Nitrate (as N)	1.96		0.020	mg/L		30-AUG-16	R3537924
Nitrite (as N)	0.029		0.010	mg/L		30-AUG-16	R3537924
Total Kjeldahl Nitrogen	5.61		0.15	mg/L	31-AUG-16	31-AUG-16	R3538254
Phosphorus, Total	0.756		0.0030	mg/L	30-AUG-16	30-AUG-16	R3536568
Sulfate (SO4)	29.9		0.30	mg/L		30-AUG-16	R3537924
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		31-AUG-16	R3538403
Organic / Inorganic Carbon							
Dissolved Organic Carbon	15.9		1.0	mg/L		29-AUG-16	R3537355
Total Metals							
Aluminum (Al)-Total	3.08		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Antimony (Sb)-Total	0.00022		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Arsenic (As)-Total	0.00263		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Barium (Ba)-Total	0.0469		0.00020	mg/L	28-AUG-16	29-AUG-16	R3536295
Beryllium (Be)-Total	0.00012		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Boron (B)-Total	0.060		0.010	mg/L	28-AUG-16	29-AUG-16	R3536295
Cadmium (Cd)-Total	0.000077		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Calcium (Ca)-Total	62.5		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Cobalt (Co)-Total	0.00123		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Copper (Cu)-Total	0.0060		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Iron (Fe)-Total	2.95		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Lead (Pb)-Total	0.00170		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Magnesium (Mg)-Total	19.9		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Manganese (Mn)-Total	0.0398		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		30-AUG-16	R3536947
Molybdenum (Mo)-Total	0.00618		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Nickel (Ni)-Total	0.00531		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Potassium (K)-Total	6.23		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Selenium (Se)-Total	0.00101		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silicon (Si)-Total	11.9		0.050	mg/L	28-AUG-16	29-AUG-16	R3536295
Silver (Ag)-Total	<0.000050		0.000050	mg/L	28-AUG-16	29-AUG-16	R3536295
Sodium (Na)-Total	15.3		0.50	mg/L	28-AUG-16	29-AUG-16	R3536295
Strontium (Sr)-Total	0.219		0.0010	mg/L	28-AUG-16	29-AUG-16	R3536295
Thallium (Tl)-Total	0.000055		0.000010	mg/L	28-AUG-16	29-AUG-16	R3536295
Tin (Sn)-Total	0.00014		0.00010	mg/L	28-AUG-16	29-AUG-16	R3536295
Vanadium (V)-Total	0.00706		0.00050	mg/L	28-AUG-16	29-AUG-16	R3536295
Zinc (Zn)-Total	0.0147		0.0030	mg/L	28-AUG-16	29-AUG-16	R3536295
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		30-AUG-16	R3537487

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1819999-5 SW-44985-082616-MS-005 Sampled By: M.S. / N.S. on 26-AUG-16 @ 13:15 Matrix: WATER Speciated Metals Aggregate Organics							
COD	60		10	mg/L		30-AUG-16	R3537425
Phenols (4AAP)	0.0021		0.0010	mg/L		31-AUG-16	R3538399

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Iron (Fe)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Potassium (K)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Silicon (Si)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Total	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L1819999-1, -2, -3, -5
Matrix Spike	Nitrate (as N)	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Bromide (Br)	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L1819999-1, -2, -3, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L1819999-4

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD.	SW846 8270
625-WT	Water	EPA 8270 Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.	SW846 8270
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
C-DIS-ORG-WT	Water	Dissolved Organic Carbon Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.	APHA 5310 B-INSTRUMENTAL
CL-IC-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
CN-TOT-WT	Water	Cyanide, Total Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.	APHA 4500CN C E-STRONG ACID DIST COLORIM
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COD-T-WT	Water	Chemical Oxygen Demand This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.	APHA 5220 D
CR-CR6-IC-WT	Water	Chromium +6 This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.	EPA 7199
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			

Reference Information

EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-NH3-UNION-WT	Water	Un-ionized ammonia	CALCULATION
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-CCMS-WT	Water	Total Metals by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colorimetrically after persulphate digestion of the sample.			
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.			
TEMP-CLIENT-WT	Water	Temperature	Result supplied by Client
THM-SUM-PPB-CALC-WT	Water	Total Trihalomethanes (THMs)	CALCULATION
Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			
TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-N
Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.			
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260
Aqueous samples are analyzed by headspace-GC/MS.			
XYLENES-SUM-CALC-	Water	Sum of Xylene Isomer	CALCULATION

Reference Information

WT Concentrations

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-ACID-EXTRA-WT		Water						
Batch	R3538635							
WG2378215-2	LCS							
2,3,6-Trichlorophenol			104.9		%		50-130	02-SEP-16
WG2378215-3	LCSD	WG2378215-2						
2,3,6-Trichlorophenol		104.9	99.9		%	4.8	50	02-SEP-16
WG2378215-1	MB							
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	02-SEP-16
Surrogate: 2,4,6-Tribromophenol			105.4		%		40-150	02-SEP-16
625-WT		Water						
Batch	R3538635							
WG2378215-2	LCS							
1-Methylnaphthalene			74.8		%		50-140	01-SEP-16
1,2-Dichlorobenzene			66.1		%		40-130	01-SEP-16
1,2,4-Trichlorobenzene			65.8		%		40-130	01-SEP-16
1,3-Dichlorobenzene			63.7		%		50-140	01-SEP-16
1,4-Dichlorobenzene			62.9		%		40-130	01-SEP-16
2-Chlorophenol			81.3		%		50-140	01-SEP-16
2-Methylnaphthalene			70.8		%		50-140	01-SEP-16
2,3,4,5-Tetrachlorophenol			90.7		%		50-140	01-SEP-16
2,3,4,6-Tetrachlorophenol			92.0		%		50-140	01-SEP-16
2,4-Dichlorophenol			84.0		%		50-140	01-SEP-16
2,4-Dimethylphenol			73.0		%		50-140	01-SEP-16
2,4-Dinitrophenol			98.9		%		40-140	01-SEP-16
2,4-Dinitrotoluene			93.9		%		50-140	01-SEP-16
2,4,5-Trichlorophenol			88.8		%		50-140	01-SEP-16
2,4,6-Trichlorophenol			85.6		%		50-140	01-SEP-16
2,6-Dinitrotoluene			84.4		%		50-140	01-SEP-16
3,3'-Dichlorobenzidine			76.2		%		50-140	01-SEP-16
4-Chloroaniline			65.3		%		30-140	01-SEP-16
Acenaphthene			82.1		%		50-140	01-SEP-16
Acenaphthylene			78.4		%		50-140	01-SEP-16
Anthracene			94.2		%		50-140	01-SEP-16
Benzo(a)anthracene			87.1		%		50-140	01-SEP-16
Benzo(a)pyrene			87.8		%		60-130	01-SEP-16
Benzo(b)fluoranthene			83.6		%		50-140	01-SEP-16
Benzo(ghi)perylene			82.3		%		50-140	01-SEP-16



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3538635							
WG2378215-2 LCS								
Benzo(k)fluoranthene			86.5		%		50-140	01-SEP-16
Bis(2-chloroethyl)ether			78.6		%		50-140	01-SEP-16
Bis(2-ethylhexyl)phthalate			98.9		%		50-140	01-SEP-16
Chrysene			89.3		%		50-140	01-SEP-16
Dibenzo(a,h)anthracene			82.4		%		50-140	01-SEP-16
Diethylphthalate			91.8		%		50-140	01-SEP-16
Dimethylphthalate			76.6		%		50-140	01-SEP-16
Fluoranthene			92.8		%		50-140	01-SEP-16
Fluorene			89.7		%		50-140	01-SEP-16
Hexachlorobenzene			89.4		%		40-130	01-SEP-16
Hexachlorobutadiene			56.5		%		40-130	01-SEP-16
Indeno(1,2,3-cd)pyrene			84.2		%		50-140	01-SEP-16
Naphthalene			76.0		%		50-140	01-SEP-16
Pentachlorophenol			89.9		%		50-140	01-SEP-16
Perylene			82.3		%		50-140	01-SEP-16
Phenanthrene			92.5		%		50-140	01-SEP-16
Pyrene			91.1		%		50-140	01-SEP-16
WG2378215-3 LCSD		WG2378215-2						
1-Methylnaphthalene		74.8	85.1		%	13	50	01-SEP-16
1,2-Dichlorobenzene		66.1	74.6		%	12	50	01-SEP-16
1,2,4-Trichlorobenzene		65.8	75.2		%	13	50	01-SEP-16
1,3-Dichlorobenzene		63.7	71.2		%	11	50	01-SEP-16
1,4-Dichlorobenzene		62.9	72.2		%	14	50	01-SEP-16
2-Chlorophenol		81.3	87.8		%	7.7	50	01-SEP-16
2-Methylnaphthalene		70.8	79.3		%	11	50	01-SEP-16
2,3,4,5-Tetrachlorophenol		90.7	94.8		%	4.3	50	01-SEP-16
2,3,4,6-Tetrachlorophenol		92.0	99.6		%	8.0	50	01-SEP-16
2,4-Dichlorophenol		84.0	92.8		%	9.9	50	01-SEP-16
2,4-Dimethylphenol		73.0	89.5		%	20	50	01-SEP-16
2,4-Dinitrophenol		98.9	107.0		%	7.9	50	01-SEP-16
2,4-Dinitrotoluene		93.9	101.6		%	7.9	50	01-SEP-16
2,4,5-Trichlorophenol		88.8	98.7		%	11	50	01-SEP-16
2,4,6-Trichlorophenol		85.6	96.9		%	12	50	01-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3538635							
WG2378215-3	LCSD	WG2378215-2						
2,6-Dinitrotoluene		84.4	93.9		%	11	50	01-SEP-16
3,3'-Dichlorobenzidine		76.2	89.3		%	16	50	01-SEP-16
4-Chloroaniline		65.3	67.0		%	2.6	50	01-SEP-16
Acenaphthene		82.1	93.3		%	13	50	01-SEP-16
Acenaphthylene		78.4	89.6		%	13	50	01-SEP-16
Anthracene		94.2	102.5		%	8.4	50	01-SEP-16
Benzo(a)anthracene		87.1	98.8		%	13	50	01-SEP-16
Benzo(a)pyrene		87.8	99.7		%	13	50	01-SEP-16
Benzo(b)fluoranthene		83.6	90.8		%	8.2	50	01-SEP-16
Benzo(ghi)perylene		82.3	91.4		%	11	50	01-SEP-16
Benzo(k)fluoranthene		86.5	94.9		%	9.3	50	01-SEP-16
Bis(2-chloroethyl)ether		78.6	83.1		%	5.5	50	01-SEP-16
Bis(2-ethylhexyl)phthalate		98.9	112.2		%	13	50	01-SEP-16
Chrysene		89.3	100.8		%	12	50	01-SEP-16
Dibenzo(a,h)anthracene		82.4	91.3		%	10	50	01-SEP-16
Diethylphthalate		91.8	97.9		%	6.4	50	01-SEP-16
Dimethylphthalate		76.6	89.3		%	15	50	01-SEP-16
Fluoranthene		92.8	102.6		%	10	50	01-SEP-16
Fluorene		89.7	95.8		%	6.7	50	01-SEP-16
Hexachlorobenzene		89.4	94.9		%	6.1	50	01-SEP-16
Hexachlorobutadiene		56.5	68.6		%	19	50	01-SEP-16
Indeno(1,2,3-cd)pyrene		84.2	96.1		%	13	50	01-SEP-16
Naphthalene		76.0	84.4		%	11	50	01-SEP-16
Pentachlorophenol		89.9	97.7		%	8.4	50	01-SEP-16
Perylene		82.3	91.3		%	10	50	01-SEP-16
Phenanthrene		92.5	98.6		%	6.4	50	01-SEP-16
Pyrene		91.1	100.4		%	9.7	50	01-SEP-16
WG2378215-1	MB							
1-Methylnaphthalene			<0.40		ug/L		0.4	01-SEP-16
1,2-Dichlorobenzene			<0.40		ug/L		0.4	01-SEP-16
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	01-SEP-16
1,3-Dichlorobenzene			<0.40		ug/L		0.4	01-SEP-16
1,4-Dichlorobenzene			<0.40		ug/L		0.4	01-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3538635							
WG2378215-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	01-SEP-16
2-Methylnaphthalene			<0.40		ug/L		0.4	01-SEP-16
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	01-SEP-16
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	01-SEP-16
2,4-Dichlorophenol			<0.30		ug/L		0.3	01-SEP-16
2,4-Dimethylphenol			<0.50		ug/L		0.5	01-SEP-16
2,4-Dinitrophenol			<1.0		ug/L		1	01-SEP-16
2,4-Dinitrotoluene			<0.40		ug/L		0.4	01-SEP-16
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	01-SEP-16
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	01-SEP-16
2,6-Dinitrotoluene			<0.40		ug/L		0.4	01-SEP-16
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	01-SEP-16
4-Chloroaniline			<0.40		ug/L		0.4	01-SEP-16
Acenaphthene			<0.20		ug/L		0.2	01-SEP-16
Acenaphthylene			<0.20		ug/L		0.2	01-SEP-16
Anthracene			<0.20		ug/L		0.2	01-SEP-16
Benzo(a)anthracene			<0.20		ug/L		0.2	01-SEP-16
Benzo(a)pyrene			<0.050		ug/L		0.05	01-SEP-16
Benzo(b)fluoranthene			<0.20		ug/L		0.2	01-SEP-16
Benzo(ghi)perylene			<0.20		ug/L		0.2	01-SEP-16
Benzo(k)fluoranthene			<0.20		ug/L		0.2	01-SEP-16
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	01-SEP-16
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	01-SEP-16
Chrysene			<0.20		ug/L		0.2	01-SEP-16
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	01-SEP-16
Diethylphthalate			<0.20		ug/L		0.2	01-SEP-16
Dimethylphthalate			<0.20		ug/L		0.2	01-SEP-16
Fluoranthene			<0.20		ug/L		0.2	01-SEP-16
Fluorene			<0.20		ug/L		0.2	01-SEP-16
Hexachlorobenzene			<0.040		ug/L		0.04	01-SEP-16
Hexachlorobutadiene			<0.20		ug/L		0.2	01-SEP-16
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	01-SEP-16
Naphthalene			<0.20		ug/L		0.2	01-SEP-16



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT Water								
Batch R3538635								
WG2378215-1 MB								
Pentachlorophenol			<0.50		ug/L		0.5	01-SEP-16
Perylene			<0.20		ug/L		0.2	01-SEP-16
Phenanthrene			<0.20		ug/L		0.2	01-SEP-16
Pyrene			<0.20		ug/L		0.2	01-SEP-16
Surrogate: 2-Fluorobiphenyl			86.1		%		40-130	01-SEP-16
Surrogate: Nitrobenzene d5			91.7		%		50-130	01-SEP-16
Surrogate: p-Terphenyl d14			96.4		%		40-130	01-SEP-16
ALK-WT Water								
Batch R3537367								
WG2378896-15 CRM WT-ALK-CRM								
Alkalinity, Total (as CaCO3)			98.9		%		80-120	30-AUG-16
WG2378896-16 DUP L1819527-1								
Alkalinity, Total (as CaCO3)		52	51		mg/L	2.5	20	30-AUG-16
WG2378896-14 LCS								
Alkalinity, Total (as CaCO3)			99.2		%		85-115	30-AUG-16
WG2378896-13 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	30-AUG-16
BR-IC-N-WT Water								
Batch R3537924								
WG2378270-4 DUP L1819999-2								
Bromide (Br)		0.71	0.72		mg/L	2.2	20	30-AUG-16
WG2378270-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	30-AUG-16
WG2378270-5 MS L1819999-2								
Bromide (Br)			N/A	MS-B	%		-	30-AUG-16
C-DIS-ORG-WT Water								
Batch R3537355								
WG2378011-3 DUP L1819999-5								
Dissolved Organic Carbon		15.9	15.1		mg/L	5.4	20	29-AUG-16
WG2378011-2 LCS								
Dissolved Organic Carbon			98.9		%		80-120	29-AUG-16
WG2378011-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	29-AUG-16
WG2378011-4 MS L1819999-5								
Dissolved Organic Carbon			108.7		%		70-130	29-AUG-16
Water								



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-WT		Water						
Batch	R3537924							
WG2378270-4	DUP	L1819999-2						
Chloride (Cl)		38.8	38.9		mg/L	0.2	25	30-AUG-16
WG2378270-1	MB		<0.50		mg/L		0.5	30-AUG-16
Chloride (Cl)								
WG2378270-5	MS	L1819999-2	86.9		%		70-130	30-AUG-16
Chloride (Cl)								
CN-TOT-WT		Water						
Batch	R3538403							
WG2379127-15	DUP	L1820307-8						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	31-AUG-16
WG2379127-6	LCS		88.2		%		80-120	31-AUG-16
Cyanide, Total								
WG2379127-5	MB		<0.0020		mg/L		0.002	31-AUG-16
Cyanide, Total								
WG2379127-16	MS	L1820307-8	87.8		%		70-130	31-AUG-16
Cyanide, Total								
COD-T-WT		Water						
Batch	R3537425							
WG2378906-3	DUP	L1819999-1						
COD		13	13		mg/L	3.9	20	30-AUG-16
WG2378906-2	LCS		101.8		%		85-115	30-AUG-16
COD								
WG2378906-1	MB		<10		mg/L		10	30-AUG-16
COD								
WG2378906-4	MS	L1819999-1	95.9		%		75-125	30-AUG-16
COD								
CR-CR6-IC-WT		Water						
Batch	R3537487							
WG2378447-4	DUP	WG2378447-3						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-AUG-16
WG2378447-2	LCS		99.6		%		80-120	30-AUG-16
Chromium, Hexavalent								
WG2378447-1	MB		<0.0010		mg/L		0.001	30-AUG-16
Chromium, Hexavalent								
WG2378447-5	MS	WG2378447-3	100.1		%		70-130	30-AUG-16
Chromium, Hexavalent								
EC-WT		Water						



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Water						
Batch	R3537438							
WG2378072-4	DUP	WG2378072-3						
Conductivity		70000	69600		umhos/cm	0.6	10	30-AUG-16
WG2378072-2	LCS							
Conductivity			99.8		%		90-110	30-AUG-16
WG2378072-1	MB							
Conductivity			<3.0		umhos/cm		3	30-AUG-16
F-IC-N-WT		Water						
Batch	R3537924							
WG2378270-4	DUP	L1819999-2						
Fluoride (F)		0.747	0.730		mg/L	2.3	20	30-AUG-16
WG2378270-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-AUG-16
WG2378270-5	MS	L1819999-2						
Fluoride (F)			94.7		%		75-125	30-AUG-16
HG-T-CVAA-WT		Water						
Batch	R3536947							
WG2378256-3	DUP	L1819527-1						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-AUG-16
WG2378256-2	LCS							
Mercury (Hg)-Total			100.0		%		80-120	30-AUG-16
WG2378256-1	MB							
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	30-AUG-16
WG2378256-4	MS	L1819527-2						
Mercury (Hg)-Total			95.7		%		70-130	30-AUG-16
MET-T-CCMS-WT		Water						
Batch	R3536295							
WG2377255-4	DUP	WG2377255-3						
Aluminum (Al)-Total		0.078	0.085		mg/L	8.9	20	29-AUG-16
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-16
Arsenic (As)-Total		0.00046	0.00047		mg/L	1.3	20	29-AUG-16
Barium (Ba)-Total		0.0128	0.0128		mg/L	0.1	20	29-AUG-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-16
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-AUG-16
Boron (B)-Total		0.012	0.012		mg/L	0.5	20	29-AUG-16
Cadmium (Cd)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-AUG-16
Calcium (Ca)-Total		36.5	37.2		mg/L	2.0	20	29-AUG-16



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 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT		Water						
Batch	R3536295							
WG2377255-4	DUP	WG2377255-3						
Cobalt (Co)-Total		0.00057	0.00056		mg/L	1.7	20	29-AUG-16
Copper (Cu)-Total		0.0016	0.0016		mg/L	3.1	20	29-AUG-16
Iron (Fe)-Total		0.138	0.136		mg/L	1.2	20	29-AUG-16
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-16
Magnesium (Mg)-Total		8.61	8.55		mg/L	0.7	20	29-AUG-16
Manganese (Mn)-Total		0.00685	0.00665		mg/L	3.0	20	29-AUG-16
Molybdenum (Mo)-Total		0.000253	0.000267		mg/L	5.3	20	29-AUG-16
Nickel (Ni)-Total		0.00066	0.00063		mg/L	4.7	20	29-AUG-16
Potassium (K)-Total		3.28	3.26		mg/L	0.7	20	29-AUG-16
Selenium (Se)-Total		0.000235	0.000249		mg/L	5.7	20	29-AUG-16
Silicon (Si)-Total		2.44	2.43		mg/L	0.1	20	29-AUG-16
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-AUG-16
Sodium (Na)-Total		5.62	5.53		mg/L	1.7	20	29-AUG-16
Strontium (Sr)-Total		0.0948	0.0955		mg/L	0.8	20	29-AUG-16
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-AUG-16
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-16
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-AUG-16
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	29-AUG-16
WG2377255-2	LCS							
Aluminum (Al)-Total			92.5		%		80-120	29-AUG-16
Antimony (Sb)-Total			94.8		%		80-120	29-AUG-16
Arsenic (As)-Total			93.2		%		80-120	29-AUG-16
Barium (Ba)-Total			98.2		%		80-120	29-AUG-16
Beryllium (Be)-Total			93.3		%		80-120	29-AUG-16
Bismuth (Bi)-Total			95.7		%		80-120	29-AUG-16
Boron (B)-Total			93.6		%		80-120	29-AUG-16
Cadmium (Cd)-Total			94.9		%		80-120	29-AUG-16
Calcium (Ca)-Total			97.0		%		80-120	29-AUG-16
Cobalt (Co)-Total			93.9		%		80-120	29-AUG-16
Copper (Cu)-Total			91.4		%		80-120	29-AUG-16
Iron (Fe)-Total			93.2		%		80-120	29-AUG-16
Lead (Pb)-Total			97.5		%		80-120	29-AUG-16
Magnesium (Mg)-Total			90.0		%		80-120	29-AUG-16



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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT								
	Water							
Batch	R3536295							
WG2377255-2	LCS							
Manganese (Mn)-Total			93.8		%		80-120	29-AUG-16
Molybdenum (Mo)-Total			99.1		%		80-120	29-AUG-16
Nickel (Ni)-Total			92.9		%		80-120	29-AUG-16
Potassium (K)-Total			94.4		%		80-120	29-AUG-16
Selenium (Se)-Total			91.3		%		80-120	29-AUG-16
Silicon (Si)-Total			98.3		%		80-120	29-AUG-16
Silver (Ag)-Total			96.7		%		80-120	29-AUG-16
Sodium (Na)-Total			91.2		%		80-120	29-AUG-16
Strontium (Sr)-Total			98.9		%		80-120	29-AUG-16
Thallium (Tl)-Total			95.4		%		80-120	29-AUG-16
Tin (Sn)-Total			96.8		%		80-120	29-AUG-16
Vanadium (V)-Total			94.9		%		80-120	29-AUG-16
Zinc (Zn)-Total			86.7		%		80-120	29-AUG-16
WG2377255-1	MB							
Aluminum (Al)-Total			<0.010		mg/L		0.01	29-AUG-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	29-AUG-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-AUG-16
Boron (B)-Total			<0.010		mg/L		0.01	29-AUG-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	29-AUG-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	29-AUG-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	29-AUG-16
Iron (Fe)-Total			<0.050		mg/L		0.05	29-AUG-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Magnesium (Mg)-Total			<0.050		mg/L		0.05	29-AUG-16
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	29-AUG-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-AUG-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-AUG-16
Potassium (K)-Total			<0.050		mg/L		0.05	29-AUG-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-AUG-16
Silicon (Si)-Total			<0.050		mg/L		0.05	29-AUG-16



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT								
	Water							
Batch	R3536295							
WG2377255-1 MB								
Silver (Ag)-Total			<0.000050		mg/L		0.00005	29-AUG-16
Sodium (Na)-Total			<0.50		mg/L		0.5	29-AUG-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	29-AUG-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-AUG-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-AUG-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-AUG-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-AUG-16
WG2377255-5 MS		WG2377255-3						
Aluminum (Al)-Total			95.7		%		70-130	29-AUG-16
Antimony (Sb)-Total			95.9		%		70-130	29-AUG-16
Arsenic (As)-Total			94.2		%		70-130	29-AUG-16
Barium (Ba)-Total			N/A	MS-B	%		-	29-AUG-16
Beryllium (Be)-Total			90.3		%		70-130	29-AUG-16
Bismuth (Bi)-Total			91.9		%		70-130	29-AUG-16
Boron (B)-Total			93.0		%		70-130	29-AUG-16
Cadmium (Cd)-Total			95.8		%		70-130	29-AUG-16
Calcium (Ca)-Total			N/A	MS-B	%		-	29-AUG-16
Cobalt (Co)-Total			92.7		%		70-130	29-AUG-16
Copper (Cu)-Total			90.3		%		70-130	29-AUG-16
Iron (Fe)-Total			N/A	MS-B	%		-	29-AUG-16
Lead (Pb)-Total			93.1		%		70-130	29-AUG-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	29-AUG-16
Manganese (Mn)-Total			90.8		%		70-130	29-AUG-16
Molybdenum (Mo)-Total			98.9		%		70-130	29-AUG-16
Nickel (Ni)-Total			90.9		%		70-130	29-AUG-16
Potassium (K)-Total			N/A	MS-B	%		-	29-AUG-16
Selenium (Se)-Total			97.4		%		70-130	29-AUG-16
Silicon (Si)-Total			N/A	MS-B	%		-	29-AUG-16
Silver (Ag)-Total			95.0		%		70-130	29-AUG-16
Sodium (Na)-Total			N/A	MS-B	%		-	29-AUG-16
Strontium (Sr)-Total			N/A	MS-B	%		-	29-AUG-16
Thallium (Tl)-Total			90.0		%		70-130	29-AUG-16
Tin (Sn)-Total			97.6		%		70-130	29-AUG-16
Vanadium (V)-Total			95.5		%		70-130	29-AUG-16



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT		Water						
Batch	R3536295							
WG2377255-5	MS	WG2377255-3						
Zinc (Zn)-Total			98.4		%		70-130	29-AUG-16
NH3-WT		Water						
Batch	R3537009							
WG2378407-15	DUP	L1820411-1						
Ammonia, Total (as N)		3.83	3.73		mg/L	2.4	20	30-AUG-16
WG2378407-14	LCS		98.3		%		85-115	30-AUG-16
Ammonia, Total (as N)								
WG2378407-13	MB		<0.020		mg/L		0.02	30-AUG-16
Ammonia, Total (as N)								
WG2378407-16	MS	L1820411-1						
Ammonia, Total (as N)			N/A	MS-B	%		-	30-AUG-16
Batch	R3538710							
WG2380086-19	DUP	L1822045-4						
Ammonia, Total (as N)		0.158	0.132		mg/L	18	20	01-SEP-16
WG2380086-18	LCS		109.7		%		85-115	01-SEP-16
Ammonia, Total (as N)								
WG2380086-17	MB		<0.020		mg/L		0.02	01-SEP-16
Ammonia, Total (as N)								
WG2380086-20	MS	L1822045-4						
Ammonia, Total (as N)			107.9		%		75-125	01-SEP-16
NO2-IC-WT		Water						
Batch	R3537924							
WG2378270-4	DUP	L1819999-2						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	30-AUG-16
WG2378270-1	MB		<0.010		mg/L		0.01	30-AUG-16
Nitrite (as N)								
WG2378270-5	MS	L1819999-2						
Nitrite (as N)			88.5		%		70-130	30-AUG-16
NO3-IC-WT		Water						
Batch	R3537924							
WG2378270-4	DUP	L1819999-2						
Nitrate (as N)		0.025	0.028		mg/L	9.1	25	30-AUG-16
WG2378270-1	MB		<0.020		mg/L		0.02	30-AUG-16
Nitrate (as N)								
WG2378270-5	MS	L1819999-2						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT								
	Water							
Batch	R3537924							
WG2378270-5	MS	L1819999-2						
Nitrate (as N)			89.5		%		70-130	30-AUG-16
P-T-COL-WT								
	Water							
Batch	R3536568							
WG2378017-3	DUP	L1819992-1						
Phosphorus, Total		0.0247	0.0255		mg/L	3.1	20	30-AUG-16
WG2378017-2	LCS		104.0		%		80-120	30-AUG-16
Phosphorus, Total								
WG2378017-1	MB		<0.0030		mg/L		0.003	30-AUG-16
Phosphorus, Total								
WG2378017-4	MS	L1819992-1						
Phosphorus, Total			82.0		%		70-130	30-AUG-16
PH-WT								
	Water							
Batch	R3537437							
WG2378069-6	DUP	WG2378069-5						
pH		8.21	8.21	J	pH units	0.00	0.2	30-AUG-16
WG2378069-4	LCS		6.99		pH units		6.9-7.1	30-AUG-16
pH								
PHENOLS-4AAP-WT								
	Water							
Batch	R3538399							
WG2379358-7	DUP	L1820246-1						
Phenols (4AAP)		0.0021	0.0017		mg/L	20	20	31-AUG-16
WG2379358-6	LCS		100.6		%		85-115	31-AUG-16
Phenols (4AAP)								
WG2379358-5	MB		<0.0010		mg/L		0.001	31-AUG-16
Phenols (4AAP)								
WG2379358-8	MS	L1820246-1						
Phenols (4AAP)			93.3		%		75-125	31-AUG-16
SO4-IC-N-WT								
	Water							
Batch	R3537924							
WG2378270-4	DUP	L1819999-2						
Sulfate (SO4)		123	122		mg/L	0.3	20	30-AUG-16
WG2378270-1	MB		<0.30		mg/L		0.3	30-AUG-16
Sulfate (SO4)								
WG2378270-5	MS	L1819999-2						
Sulfate (SO4)			N/A	MS-B	%		-	30-AUG-16



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT		Water						
Batch	R3536840							
WG2377311-3	DUP	L1817864-2						
Total Dissolved Solids		779	786		mg/L	1.0	20	29-AUG-16
WG2377311-2	LCS							
Total Dissolved Solids			100.2		%		85-115	29-AUG-16
WG2377311-1	MB							
Total Dissolved Solids			<10		mg/L		10	29-AUG-16
Batch	R3540735							
WG2379685-3	DUP	L1819999-5						
Total Dissolved Solids		356	365		mg/L	2.4	20	31-AUG-16
WG2379685-2	LCS							
Total Dissolved Solids			93.9		%		85-115	31-AUG-16
WG2379685-1	MB							
Total Dissolved Solids			<10		mg/L		10	31-AUG-16
SOLIDS-TSS-WT		Water						
Batch	R3539673							
WG2380157-3	DUP	L1820566-7						
Total Suspended Solids		21800	25600		mg/L	16	20	02-SEP-16
WG2380157-2	LCS							
Total Suspended Solids			101.8		%		85-115	02-SEP-16
WG2380157-1	MB							
Total Suspended Solids			<2.0		mg/L		2	02-SEP-16
Batch	R3539686							
WG2380162-3	DUP	L1819998-2						
Total Suspended Solids		1210	1200		mg/L	0.7	20	02-SEP-16
WG2380162-2	LCS							
Total Suspended Solids			99.6		%		85-115	02-SEP-16
WG2380162-1	MB							
Total Suspended Solids			<2.0		mg/L		2	02-SEP-16
TKN-WT		Water						
Batch	R3538254							
WG2378985-3	DUP	L1819999-4						
Total Kjeldahl Nitrogen		3.70	3.57		mg/L	3.6	20	31-AUG-16
WG2378985-2	LCS							
Total Kjeldahl Nitrogen			97.2		%		75-125	31-AUG-16
WG2378985-1	MB							
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	31-AUG-16
WG2378985-4	MS	L1819999-4						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT								
	Water							
Batch	R3538254							
WG2378985-4 MS		L1819999-4						
Total Kjeldahl Nitrogen			99.6		%		70-130	31-AUG-16
VOC-ROU-HS-WT								
	Water							
Batch	R3537011							
WG2375703-4 DUP		WG2375703-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	30-AUG-16
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	30-AUG-16
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3537011							
WG2375703-4 DUP		WG2375703-3						
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	30-AUG-16
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	30-AUG-16
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	30-AUG-16
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	30-AUG-16
WG2375703-1 LCS								
1,1,1,2-Tetrachloroethane			93.8		%		70-130	29-AUG-16
1,1,2,2-Tetrachloroethane			85.3		%		70-130	29-AUG-16
1,1,1-Trichloroethane			104.6		%		70-130	29-AUG-16
1,1,2-Trichloroethane			86.1		%		70-130	29-AUG-16
1,2-Dibromoethane			82.4		%		70-130	29-AUG-16
1,1-Dichloroethane			89.3		%		70-130	29-AUG-16
1,1-Dichloroethylene			99.1		%		70-130	29-AUG-16
1,2-Dichlorobenzene			96.6		%		70-130	29-AUG-16
1,2-Dichloroethane			89.9		%		70-130	29-AUG-16
1,2-Dichloropropane			89.8		%		70-130	29-AUG-16
1,3-Dichlorobenzene			99.6		%		70-130	29-AUG-16
1,4-Dichlorobenzene			102.1		%		70-130	29-AUG-16
Acetone			85.0		%		60-140	29-AUG-16
Benzene			97.2		%		70-130	29-AUG-16
Bromodichloromethane			98.8		%		70-130	29-AUG-16
Bromoform			90.8		%		70-130	29-AUG-16
Bromomethane			105.6		%		60-140	29-AUG-16
Carbon tetrachloride			110.5		%		70-130	29-AUG-16
Chlorobenzene			94.7		%		70-130	29-AUG-16



Quality Control Report

Workorder: L1819999

Report Date: 06-SEP-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3537011							
WG2375703-1	LCS							
Chloroethane			99.6		%		70-130	29-AUG-16
Chloroform			101.1		%		70-130	29-AUG-16
cis-1,2-Dichloroethylene			98.5		%		70-130	29-AUG-16
cis-1,3-Dichloropropene			82.6		%		70-130	29-AUG-16
Dibromochloromethane			95.9		%		70-130	29-AUG-16
Dichlorodifluoromethane			117.9		%		50-140	29-AUG-16
Dichloromethane			99.0		%		70-130	29-AUG-16
Ethylbenzene			86.0		%		70-130	29-AUG-16
m+p-Xylenes			92.7		%		70-130	29-AUG-16
Methyl Ethyl Ketone			75.0		%		60-140	29-AUG-16
Methyl Isobutyl Ketone			62.7		%		50-150	29-AUG-16
n-Hexane			105.0		%		70-130	29-AUG-16
MTBE			92.5		%		70-130	29-AUG-16
o-Xylene			84.6		%		70-130	29-AUG-16
Styrene			82.7		%		70-130	29-AUG-16
Tetrachloroethylene			101.2		%		70-130	29-AUG-16
Toluene			87.5		%		70-130	29-AUG-16
trans-1,2-Dichloroethylene			98.3		%		70-130	29-AUG-16
trans-1,3-Dichloropropene			78.9		%		70-130	29-AUG-16
Trichloroethylene			107.2		%		70-130	29-AUG-16
Trichlorofluoromethane			114.9		%		60-140	29-AUG-16
Vinyl chloride			94.6		%		60-140	29-AUG-16
WG2375703-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	30-AUG-16
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	30-AUG-16
1,1,1-Trichloroethane			<0.50		ug/L		0.5	30-AUG-16
1,1,2-Trichloroethane			<0.50		ug/L		0.5	30-AUG-16
1,2-Dibromoethane			<0.20		ug/L		0.2	30-AUG-16
1,1-Dichloroethane			<0.50		ug/L		0.5	30-AUG-16
1,1-Dichloroethylene			<0.50		ug/L		0.5	30-AUG-16
1,2-Dichlorobenzene			<0.50		ug/L		0.5	30-AUG-16
1,2-Dichloroethane			<0.50		ug/L		0.5	30-AUG-16
1,2-Dichloropropane			<0.50		ug/L		0.5	30-AUG-16
1,3-Dichlorobenzene			<0.50		ug/L		0.5	30-AUG-16



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3537011							
WG2375703-2 MB								
1,4-Dichlorobenzene			<0.50		ug/L		0.5	30-AUG-16
Acetone			<20		ug/L		20	30-AUG-16
Benzene			<0.50		ug/L		0.5	30-AUG-16
Bromodichloromethane			<1.0		ug/L		1	30-AUG-16
Bromoform			<1.0		ug/L		1	30-AUG-16
Bromomethane			<0.50		ug/L		0.5	30-AUG-16
Carbon tetrachloride			<0.50		ug/L		0.5	30-AUG-16
Chlorobenzene			<0.50		ug/L		0.5	30-AUG-16
Chloroethane			<1.0		ug/L		1	30-AUG-16
Chloroform			<1.0		ug/L		1	30-AUG-16
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	30-AUG-16
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	30-AUG-16
Dibromochloromethane			<1.0		ug/L		1	30-AUG-16
Dichlorodifluoromethane			<1.0		ug/L		1	30-AUG-16
Dichloromethane			<2.0		ug/L		2	30-AUG-16
Ethylbenzene			<0.50		ug/L		0.5	30-AUG-16
m+p-Xylenes			<1.0		ug/L		1	30-AUG-16
Methyl Ethyl Ketone			<20		ug/L		20	30-AUG-16
Methyl Isobutyl Ketone			<20		ug/L		20	30-AUG-16
n-Hexane			<0.50		ug/L		0.5	30-AUG-16
MTBE			<0.50		ug/L		0.5	30-AUG-16
o-Xylene			<0.50		ug/L		0.5	30-AUG-16
Styrene			<0.50		ug/L		0.5	30-AUG-16
Tetrachloroethylene			<0.50		ug/L		0.5	30-AUG-16
Toluene			<0.50		ug/L		0.5	30-AUG-16
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	30-AUG-16
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	30-AUG-16
Trichloroethylene			<0.50		ug/L		0.5	30-AUG-16
Trichlorofluoromethane			<1.0		ug/L		1	30-AUG-16
Vinyl chloride			<0.50		ug/L		0.5	30-AUG-16
Surrogate: 1,4-Difluorobenzene			101.6		%		70-130	30-AUG-16
Surrogate: 4-Bromofluorobenzene			93.9		%		70-130	30-AUG-16

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Report To		Acct#13791		Report Format / Distribution		# Below (Rush Turnaround Time (TAT) is not available for all tests)																																																																																																																																																																		
Company: GHD LIMITED		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)		P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT		E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT		E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge		Specify Date Required for E2,E or P:																																																																																																																																																										
Contact: Jennifer Balkwill		Criteria on Report - provide details below if box checked		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Email 1 or Fax <u>Jennifer.Balkwill@ghd.com</u>		Email 2 See PO		Analysis Request																																																																																																																																																														
Address: 651 Colby Drive, Waterloo, Ontario N2V 1C2		Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																																																		
Phone: 519-884-0510		Copy of Invoice with Report <input type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<table border="1" style="width:100%; border-collapse: collapse; font-size: x-small;"> <tr> <td>ALK, Conductivity, pH, TDS, TSS, Phenols</td> <td>Br, NO2, NO3, SO4, Cl, F (ANIONS-IC-WT)</td> <td>DOC (C-DIS-ORG-WT), COD, TKN, TP</td> <td>Total CN (CN-TOT-WT)</td> <td>Un-ionized NH3 (ETL-NH3-UNION-CL-WT)</td> <td>Total Metals (MET-T-ME-WT, WT-44985-Metals)</td> <td>Total Mercury (HG-T-CVAAA-WT)</td> <td>Total Cr+6 (CR-CR6-IC-WT), Hardness calc</td> <td>VOCs (VOC-ROU-HS-WT, WT-44885-VOC)</td> <td>SVOCs (SVOC-44985-P-WT)</td> <td>CLIENT SUPPLIED TEMPERATURE **</td> <td>CLIENT SUPPLIED pH **</td> <td rowspan="10" style="text-align: center; vertical-align: middle;">Number of Containers</td> </tr> <tr> <td>ALS Quote #: 44985</td> <td>Project Information</td> <td colspan="10" style="text-align: center;">Oil and Gas Required Fields (client use)</td> </tr> <tr> <td>Job #: 44985</td> <td>ALS Lab Work Order # (lab use only)</td> <td>Approver ID:</td> <td>Cost Center:</td> <td colspan="9"></td> </tr> <tr> <td>PO / AFE: 73503080</td> <td>ALS Contact: L.Ermeta</td> <td>GL Account:</td> <td>Routing Code:</td> <td colspan="9"></td> </tr> <tr> <td>LSD:</td> <td>ALS Sample # (lab use only)</td> <td>Sampler: Neil Shannick</td> <td>Activity Code:</td> <td colspan="9"></td> </tr> <tr> <td></td> <td>Sample Identification and/or Coordinates (This description will appear on the report)</td> <td>Date (dd-mmm-yy)</td> <td>Time (hh:mm)</td> <td>Sample Type</td> <td colspan="7"></td> <td></td> <td></td> </tr> <tr> <td></td> <td>1 SW-44985-082616-MS-001</td> <td>26-Aug-16</td> <td>11:00</td> <td>comp water</td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>25</td><td>14</td> </tr> <tr> <td></td> <td>2 SW-44985-082616-MS-002</td> <td>26-Aug-16</td> <td>11:00</td> <td>water</td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>25</td><td>14</td> </tr> <tr> <td></td> <td>3 SW-44985-082616-MS-003</td> <td>26-Aug-16</td> <td>11:00</td> <td>water</td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>25</td><td>14</td> </tr> <tr> <td></td> <td>4 SW-44985-082616-MS-004</td> <td>26-Aug-16</td> <td>13:00</td> <td>water</td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td>25</td><td>8</td> </tr> <tr> <td></td> <td>5 SW-44985-082616-MS-005</td> <td>26-Aug-16</td> <td>13:15</td> <td>water</td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td>25</td><td>8</td> </tr> </table>										ALK, Conductivity, pH, TDS, TSS, Phenols	Br, NO2, NO3, SO4, Cl, F (ANIONS-IC-WT)	DOC (C-DIS-ORG-WT), COD, TKN, TP	Total CN (CN-TOT-WT)	Un-ionized NH3 (ETL-NH3-UNION-CL-WT)	Total Metals (MET-T-ME-WT, WT-44985-Metals)	Total Mercury (HG-T-CVAAA-WT)	Total Cr+6 (CR-CR6-IC-WT), Hardness calc	VOCs (VOC-ROU-HS-WT, WT-44885-VOC)	SVOCs (SVOC-44985-P-WT)	CLIENT SUPPLIED TEMPERATURE **	CLIENT SUPPLIED pH **	Number of Containers	ALS Quote #: 44985	Project Information	Oil and Gas Required Fields (client use)										Job #: 44985	ALS Lab Work Order # (lab use only)	Approver ID:	Cost Center:										PO / AFE: 73503080	ALS Contact: L.Ermeta	GL Account:	Routing Code:										LSD:	ALS Sample # (lab use only)	Sampler: Neil Shannick	Activity Code:											Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type											1 SW-44985-082616-MS-001	26-Aug-16	11:00	comp water	X	X	X	X	X	X	X	X	25	14		2 SW-44985-082616-MS-002	26-Aug-16	11:00	water	X	X	X	X	X	X	X	X	25	14		3 SW-44985-082616-MS-003	26-Aug-16	11:00	water	X	X	X	X	X	X	X	X	25	14		4 SW-44985-082616-MS-004	26-Aug-16	13:00	water	X	X	X	X	X	X	X		25	8		5 SW-44985-082616-MS-005	26-Aug-16	13:15	water	X	X	X	X	X	X	X		25	8
ALK, Conductivity, pH, TDS, TSS, Phenols	Br, NO2, NO3, SO4, Cl, F (ANIONS-IC-WT)	DOC (C-DIS-ORG-WT), COD, TKN, TP	Total CN (CN-TOT-WT)	Un-ionized NH3 (ETL-NH3-UNION-CL-WT)	Total Metals (MET-T-ME-WT, WT-44985-Metals)											Total Mercury (HG-T-CVAAA-WT)	Total Cr+6 (CR-CR6-IC-WT), Hardness calc	VOCs (VOC-ROU-HS-WT, WT-44885-VOC)	SVOCs (SVOC-44985-P-WT)	CLIENT SUPPLIED TEMPERATURE **	CLIENT SUPPLIED pH **	Number of Containers																																																																																																																																																		
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	1 SW-44985-082616-MS-001	26-Aug-16	11:00	comp water	X											X	X	X	X	X	X		X	25	14																																																																																																																																															
	2 SW-44985-082616-MS-002	26-Aug-16	11:00	water	X											X	X	X	X	X	X		X	25	14																																																																																																																																															
	3 SW-44985-082616-MS-003	26-Aug-16	11:00	water	X											X	X	X	X	X	X		X	25	14																																																																																																																																															
	4 SW-44985-082616-MS-004	26-Aug-16	13:00	water	X	X	X	X	X	X	X		25	8																																																																																																																																																										
	5 SW-44985-082616-MS-005	26-Aug-16	13:15	water	X	X	X	X	X	X	X		25	8																																																																																																																																																										
ALS Lab Work Order # (lab use only)		ALS Contact: L.Ermeta		Sampler: Neil Shannick		Activity Code:																																																																																																																																																																		
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1		SW-44985-082616-MS-001		26-Aug-16		11:00		comp water		X	X	X	X	X	X	X	X	25	14																																																																																																																																																					
2		SW-44985-082616-MS-002		26-Aug-16		11:00		water		X	X	X	X	X	X	X	X	25	14																																																																																																																																																					
3		SW-44985-082616-MS-003		26-Aug-16		11:00		water		X	X	X	X	X	X	X	X	25	14																																																																																																																																																					
4		SW-44985-082616-MS-004		26-Aug-16		13:00		water		X	X	X	X	X	X	X		25	8																																																																																																																																																					
5		SW-44985-082616-MS-005		26-Aug-16		13:15		water		X	X	X	X	X	X	X		25	8																																																																																																																																																					

Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report (client Use)		SAMPLE CONDITION AS RECEIVED (lab use only)			
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation		Frozen <input type="checkbox"/>		SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No				Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>	
				Cooling Initiated <input type="checkbox"/>		INITIAL COOLER TEMPERATURES °C	
						FINAL COOLER TEMPERATURES °C	
						83	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)			
Released by: <u>Neil Shannick</u>		Received by: <u>[Signature]</u>		Date: <u>Aug 26, 2016</u>		Date: <u>Aug 26, 2016</u>	
Time: <u>16:30</u>		Time: <u>16:35</u>		Time: <u>16:35</u>		Time: <u>16:35</u>	



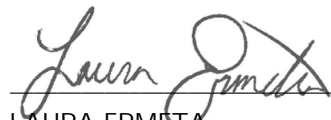
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 30-AUG-16
Report Date: 01-SEP-16 13:25 (MT)
Version: FINAL

Client Phone: 519-884-7780

Certificate of Analysis

Lab Work Order #: L1821188
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

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Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MICROTOX-ORG-CL	Water	Microtox Original	AEC Microbiological Methods
Light output of luminescent bacteria is measured after they have been challenged by a sample of unknown toxicity, and compared to the light output of a control reagent blank. The difference in light output is attributed to the effect of the sample on the organisms, and the degree of light loss indicates metabolic inhibition and the degree of toxicity of the sample to the bacteria. EC50(5) and EC50(15) values are reported, and refer to the effective concentration of the sample that caused a 50% decrease in the light output in 5 and 15 minutes			
MICROTOX-PHYSICAL-CL	Water	Microtox Physical Tests	WCMUC (1991)

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Environmental

Quality Control Report

Workorder: L1821188

Report Date: 01-SEP-16

Page 1 of 2

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MICROTOX-ORG-CL								
	Water							
Batch	R3538750							
WG2380299-6 CRM		PHENOL_CL						
EC50 (5min) Original			15.3		mg/L		13-26	31-AUG-16
WG2380299-7 CRM		PHENOL_CL						
EC50 (5min) Original			16.7		mg/L		13-26	31-AUG-16
WG2380299-4 DUP		L1821188-1						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		31-AUG-16
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		31-AUG-16
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		31-AUG-16
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		31-AUG-16
WG2380299-1 MB								
EC50 (15min) Original			PASS					31-AUG-16
EC20 (15min) Original			PASS					31-AUG-16
EC50 (5min) Original			PASS					31-AUG-16
EC20 (5min) Original			PASS					31-AUG-16

Quality Control Report

Workorder: L1821188

Report Date: 01-SEP-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
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Page 2 of 2

Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



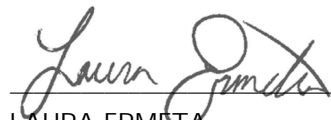
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 23-SEP-16
Report Date: 30-SEP-16 13:12 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1833266
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:



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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-1 EQ POND							
Sampled By: CLIENT on 22-SEP-16 @ 08:00							
Matrix: WATER							
Field Tests							
pH, Client Supplied	7.74		0.10	pH		28-SEP-16	R3559148
Temperature, Client	21.0		-50	Deg. C		28-SEP-16	R3559148
Physical Tests							
Conductivity	582		3.0	umhos/cm		23-SEP-16	R3556174
Hardness (as CaCO3)	221	HTC	10	mg/L		26-SEP-16	
pH	7.99		0.10	pH units		23-SEP-16	R3556173
Total Suspended Solids	<2.0		2.0	mg/L	27-SEP-16	28-SEP-16	R3558771
Total Dissolved Solids	377	DLDS	20	mg/L		24-SEP-16	R3557757
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	118		10	mg/L		28-SEP-16	R3559371
Unionized ammonia	0.0124		0.00056	mg/L		30-SEP-16	
Ammonia, Total (as N)	0.445		0.020	mg/L		26-SEP-16	R3557982
Bromide (Br)	0.44		0.10	mg/L		26-SEP-16	R3558487
Chloride (Cl)	32.2		0.50	mg/L		26-SEP-16	R3558487
Fluoride (F)	0.790		0.020	mg/L		26-SEP-16	R3558487
Nitrate (as N)	0.021		0.020	mg/L		26-SEP-16	R3558487
Nitrite (as N)	0.012		0.010	mg/L		26-SEP-16	R3558487
Total Kjeldahl Nitrogen	0.86		0.15	mg/L	26-SEP-16	26-SEP-16	R3557467
Phosphorus, Total	0.0183		0.0030	mg/L	26-SEP-16	27-SEP-16	R3557493
Sulfate (SO4)	125		0.30	mg/L		26-SEP-16	R3558487
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		26-SEP-16	R3557795
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.2		1.0	mg/L		25-SEP-16	R3557460
Total Metals							
Aluminum (Al)-Total	0.043		0.010	mg/L	23-SEP-16	23-SEP-16	R3556780
Antimony (Sb)-Total	0.00044		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Arsenic (As)-Total	0.00213		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Barium (Ba)-Total	0.0405		0.00020	mg/L	23-SEP-16	23-SEP-16	R3556780
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Boron (B)-Total	0.120		0.010	mg/L	23-SEP-16	23-SEP-16	R3556780
Cadmium (Cd)-Total	<0.000030	DLUI	0.000030	mg/L	23-SEP-16	23-SEP-16	R3556780
Calcium (Ca)-Total	62.0		0.50	mg/L	23-SEP-16	23-SEP-16	R3556780
Cobalt (Co)-Total	0.00010		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Copper (Cu)-Total	<0.0010		0.0010	mg/L	23-SEP-16	23-SEP-16	R3556780
Iron (Fe)-Total	0.050		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Lead (Pb)-Total	<0.00010		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Magnesium (Mg)-Total	16.1		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Manganese (Mn)-Total	0.0194		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		26-SEP-16	R3557063
Molybdenum (Mo)-Total	0.0637		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-1 EQ POND							
Sampled By: CLIENT on 22-SEP-16 @ 08:00							
Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00161		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Potassium (K)-Total	3.85		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Selenium (Se)-Total	0.00123		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Silicon (Si)-Total	1.01		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Sodium (Na)-Total	23.9		0.50	mg/L	23-SEP-16	23-SEP-16	R3556780
Strontium (Sr)-Total	0.533		0.0010	mg/L	23-SEP-16	23-SEP-16	R3556780
Thallium (Tl)-Total	0.000019		0.000010	mg/L	23-SEP-16	23-SEP-16	R3556780
Tin (Sn)-Total	<0.00010		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Vanadium (V)-Total	<0.00050		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	23-SEP-16	23-SEP-16	R3556780
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		26-SEP-16	R3557575
Aggregate Organics							
COD	15		10	mg/L		27-SEP-16	R3558508
Phenols (4AAP)	0.0039		0.0010	mg/L		27-SEP-16	R3558578
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-SEP-16	R3557084
Benzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Bromodichloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromoform	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromomethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Carbon tetrachloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
Chlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dibromochloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroform	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,2-Dibromoethane	<0.20		0.20	ug/L		27-SEP-16	R3557084
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,1-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,2-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichloromethane	<2.0		2.0	ug/L		27-SEP-16	R3557084
1,2-Dichloropropane	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Ethylbenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-1 EQ POND							
Sampled By: CLIENT on 22-SEP-16 @ 08:00							
Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Methyl Ethyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
Methyl Isobutyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
MTBE	<0.50		0.50	ug/L		27-SEP-16	R3557084
Styrene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Tetrachloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Toluene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichlorofluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Vinyl chloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
o-Xylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
m+p-Xylenes	<1.0		1.0	ug/L		27-SEP-16	R3557084
Xylenes (Total)	<1.1		1.1	ug/L		27-SEP-16	
Surrogate: 4-Bromofluorobenzene	97.0		70-130	%		27-SEP-16	R3557084
Surrogate: 1,4-Difluorobenzene	103.6		70-130	%		27-SEP-16	R3557084
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-SEP-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559706
Surrogate: 2,4,6-Tribromophenol	41.6		40-150	%	27-SEP-16	29-SEP-16	R3559706
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Acenaphthylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)pyrene	<0.050		0.050	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
4-Chloroaniline	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Chlorophenol	<0.90	RRR	0.90	ug/L	27-SEP-16	29-SEP-16	R3559015
Chrysene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-1 EQ POND Sampled By: CLIENT on 22-SEP-16 @ 08:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dichlorophenol	<0.90	RRR	0.90	ug/L	27-SEP-16	29-SEP-16	R3559015
Diethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dimethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dimethylphenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrophenol	<4.0	RRR	4.0	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-SEP-16	29-SEP-16	R3559015
Fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Fluorene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobenzene	<0.040		0.040	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobutadiene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Naphthalene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Pentachlorophenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
Perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Phenanthrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Pyrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
2,3,4,5-Tetrachlorophenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
2,3,4,6-Tetrachlorophenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4,5-Trichlorophenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4,6-Trichlorophenol	<1.5	RRR	1.5	ug/L	27-SEP-16	29-SEP-16	R3559015
Surrogate: 2-Fluorobiphenyl	88.7		40-130	%	27-SEP-16	29-SEP-16	R3559015
Surrogate: Nitrobenzene d5	95.9		50-130	%	27-SEP-16	29-SEP-16	R3559015
Surrogate: p-Terphenyl d14	97.7		40-130	%	27-SEP-16	29-SEP-16	R3559015
Report Remarks : RRR: No sample left to re-extract, detection limits raised due to low recovery of associated surrogate.							
L1833266-2 WEST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:15 Matrix: WATER							
Field Tests							
pH, Client Supplied	8.14		0.10	pH		28-SEP-16	R3559148
Temperature, Client	21.0		-50	Deg. C		28-SEP-16	R3559148
Physical Tests							
Conductivity	574		3.0	umhos/cm		23-SEP-16	R3556174
Hardness (as CaCO3)	233	HTC	10	mg/L		27-SEP-16	
pH	8.18		0.10	pH units		23-SEP-16	R3556173
Total Suspended Solids	2.0		2.0	mg/L	27-SEP-16	28-SEP-16	R3558771
Total Dissolved Solids	374	DLDS	20	mg/L		24-SEP-16	R3557757
Anions and Nutrients							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-2 WEST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:15 Matrix: WATER							
Anions and Nutrients							
Alkalinity, Total (as CaCO ₃)	107		10	mg/L		28-SEP-16	R3559371
Unionized ammonia	0.131		0.0068	mg/L		30-SEP-16	
Ammonia, Total (as N)	1.94	DLHC	0.10	mg/L		27-SEP-16	R3558083
Bromide (Br)	0.46		0.10	mg/L		26-SEP-16	R3558487
Chloride (Cl)	33.0		0.50	mg/L		26-SEP-16	R3558487
Fluoride (F)	0.816		0.020	mg/L		26-SEP-16	R3558487
Nitrate (as N)	<0.020		0.020	mg/L		26-SEP-16	R3558487
Nitrite (as N)	<0.010		0.010	mg/L		26-SEP-16	R3558487
Total Kjeldahl Nitrogen	3.13		0.15	mg/L	29-SEP-16	29-SEP-16	R3560670
Phosphorus, Total	0.0217		0.0030	mg/L	26-SEP-16	27-SEP-16	R3557493
Sulfate (SO ₄)	126		0.30	mg/L		26-SEP-16	R3558487
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		26-SEP-16	R3557795
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.1		1.0	mg/L		25-SEP-16	R3557460
Total Metals							
Aluminum (Al)-Total	0.117		0.010	mg/L	23-SEP-16	26-SEP-16	R3556780
Antimony (Sb)-Total	0.00051		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780
Arsenic (As)-Total	0.00270		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780
Barium (Ba)-Total	0.0420		0.00020	mg/L	23-SEP-16	26-SEP-16	R3556780
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-SEP-16	26-SEP-16	R3556780
Boron (B)-Total	0.132		0.010	mg/L	23-SEP-16	26-SEP-16	R3556780
Cadmium (Cd)-Total	<0.000040	DLUI	0.000040	mg/L	23-SEP-16	26-SEP-16	R3556780
Calcium (Ca)-Total	64.0		0.50	mg/L	23-SEP-16	26-SEP-16	R3556780
Cobalt (Co)-Total	0.00016		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780
Copper (Cu)-Total	<0.0010		0.0010	mg/L	23-SEP-16	26-SEP-16	R3556780
Iron (Fe)-Total	0.122		0.050	mg/L	23-SEP-16	26-SEP-16	R3556780
Lead (Pb)-Total	0.00022		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780
Magnesium (Mg)-Total	17.7		0.050	mg/L	23-SEP-16	26-SEP-16	R3556780
Manganese (Mn)-Total	0.0136		0.00050	mg/L	23-SEP-16	26-SEP-16	R3556780
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		26-SEP-16	R3557063
Molybdenum (Mo)-Total	0.0653		0.000050	mg/L	23-SEP-16	26-SEP-16	R3556780
Nickel (Ni)-Total	0.00198		0.00050	mg/L	23-SEP-16	26-SEP-16	R3556780
Potassium (K)-Total	4.25		0.050	mg/L	23-SEP-16	26-SEP-16	R3556780
Selenium (Se)-Total	0.00140		0.000050	mg/L	23-SEP-16	26-SEP-16	R3556780
Silicon (Si)-Total	1.00		0.050	mg/L	23-SEP-16	26-SEP-16	R3556780
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-SEP-16	26-SEP-16	R3556780
Sodium (Na)-Total	26.6		0.50	mg/L	23-SEP-16	26-SEP-16	R3556780
Strontium (Sr)-Total	0.547		0.0010	mg/L	23-SEP-16	26-SEP-16	R3556780
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	23-SEP-16	26-SEP-16	R3556780
Tin (Sn)-Total	<0.00010		0.00010	mg/L	23-SEP-16	26-SEP-16	R3556780

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-2 WEST RETENTION POND							
Sampled By: CLIENT on 22-SEP-16 @ 08:15							
Matrix: WATER							
Total Metals							
Vanadium (V)-Total	0.00067		0.00050	mg/L	23-SEP-16	26-SEP-16	R3556780
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	23-SEP-16	26-SEP-16	R3556780
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		26-SEP-16	R3557575
Aggregate Organics							
COD	22		10	mg/L		27-SEP-16	R3558508
Phenols (4AAP)	0.0044		0.0010	mg/L		27-SEP-16	R3558578
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-SEP-16	R3557084
Benzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Bromodichloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromoform	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromomethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Carbon tetrachloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
Chlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dibromochloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroform	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,2-Dibromoethane	<0.20		0.20	ug/L		27-SEP-16	R3557084
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,1-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,2-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichloromethane	<2.0		2.0	ug/L		27-SEP-16	R3557084
1,2-Dichloropropane	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Ethylbenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
n-Hexane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Methyl Ethyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
Methyl Isobutyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
MTBE	<0.50		0.50	ug/L		27-SEP-16	R3557084
Styrene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Tetrachloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Toluene	<0.50		0.50	ug/L		27-SEP-16	R3557084

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-2 WEST RETENTION POND							
Sampled By: CLIENT on 22-SEP-16 @ 08:15							
Matrix: WATER							
Volatile Organic Compounds							
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichlorofluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Vinyl chloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
o-Xylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
m+p-Xylenes	<1.0		1.0	ug/L		27-SEP-16	R3557084
Xylenes (Total)	<1.1		1.1	ug/L		27-SEP-16	
Surrogate: 4-Bromofluorobenzene	95.5		70-130	%		27-SEP-16	R3557084
Surrogate: 1,4-Difluorobenzene	103.5		70-130	%		27-SEP-16	R3557084
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-SEP-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559706
Surrogate: 2,4,6-Tribromophenol	88.3		40-150	%	27-SEP-16	29-SEP-16	R3559706
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Acenaphthylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)pyrene	<0.050		0.050	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
4-Chloroaniline	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Chlorophenol	<0.30		0.30	ug/L	27-SEP-16	29-SEP-16	R3559015
Chrysene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dichlorophenol	<0.30		0.30	ug/L	27-SEP-16	29-SEP-16	R3559015
Diethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dimethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dimethylphenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrophenol	<1.0		1.0	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-SEP-16	29-SEP-16	R3559015
Fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-2 WEST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:15 Matrix: WATER							
Semi-Volatile Organics							
Fluorene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobenzene	<0.040		0.040	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobutadiene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Naphthalene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Pentachlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
Perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Phenanthrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Pyrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
Surrogate: 2-Fluorobiphenyl	85.8		40-130	%	27-SEP-16	29-SEP-16	R3559015
Surrogate: Nitrobenzene d5	95.0		50-130	%	27-SEP-16	29-SEP-16	R3559015
Surrogate: p-Terphenyl d14	100.8		40-130	%	27-SEP-16	29-SEP-16	R3559015
L1833266-3 EAST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.87		0.10	pH		28-SEP-16	R3559148
Temperature, Client	21.0		-50	Deg. C		28-SEP-16	R3559148
Physical Tests							
Conductivity	555		3.0	umhos/cm		23-SEP-16	R3556174
Hardness (as CaCO3)	236	HTC	10	mg/L		26-SEP-16	
pH	8.16		0.10	pH units		23-SEP-16	R3556173
Total Suspended Solids	24.4		2.0	mg/L	28-SEP-16	29-SEP-16	R3559693
Total Dissolved Solids	373	DLDS	20	mg/L		24-SEP-16	R3557757
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	104		10	mg/L		28-SEP-16	R3559371
Unionized ammonia	0.151		0.0074	mg/L		30-SEP-16	
Ammonia, Total (as N)	4.06	DLHC	0.20	mg/L		27-SEP-16	R3558083
Bromide (Br)	0.47		0.10	mg/L		26-SEP-16	R3558487
Chloride (Cl)	26.3		0.50	mg/L		26-SEP-16	R3558487
Fluoride (F)	0.838		0.020	mg/L		26-SEP-16	R3558487
Nitrate (as N)	<0.020		0.020	mg/L		26-SEP-16	R3558487
Nitrite (as N)	<0.010		0.010	mg/L		26-SEP-16	R3558487
Total Kjeldahl Nitrogen	4.75		0.15	mg/L	26-SEP-16	26-SEP-16	R3557467
Phosphorus, Total	0.0604		0.0030	mg/L	26-SEP-16	27-SEP-16	R3557493

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-3 EAST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:30 Matrix: WATER							
Anions and Nutrients							
Sulfate (SO4)	135		0.30	mg/L		26-SEP-16	R3558487
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		26-SEP-16	R3557795
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.2		1.0	mg/L		25-SEP-16	R3557460
Total Metals							
Aluminum (Al)-Total	1.47		0.010	mg/L	23-SEP-16	23-SEP-16	R3556780
Antimony (Sb)-Total	0.00061		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Arsenic (As)-Total	0.00294		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Barium (Ba)-Total	0.0599		0.00020	mg/L	23-SEP-16	23-SEP-16	R3556780
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Boron (B)-Total	0.104		0.010	mg/L	23-SEP-16	23-SEP-16	R3556780
Cadmium (Cd)-Total	<0.000070	DLUI	0.000070	mg/L	23-SEP-16	23-SEP-16	R3556780
Calcium (Ca)-Total	66.0		0.50	mg/L	23-SEP-16	23-SEP-16	R3556780
Cobalt (Co)-Total	0.00069		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Copper (Cu)-Total	0.0027		0.0010	mg/L	23-SEP-16	23-SEP-16	R3556780
Iron (Fe)-Total	1.18		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Lead (Pb)-Total	0.00094		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Magnesium (Mg)-Total	17.2		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Manganese (Mn)-Total	0.0478		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		26-SEP-16	R3557063
Molybdenum (Mo)-Total	0.0768		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Nickel (Ni)-Total	0.00342		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Potassium (K)-Total	4.83		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Selenium (Se)-Total	0.00184		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Silicon (Si)-Total	4.44		0.050	mg/L	23-SEP-16	23-SEP-16	R3556780
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-SEP-16	23-SEP-16	R3556780
Sodium (Na)-Total	22.2		0.50	mg/L	23-SEP-16	23-SEP-16	R3556780
Strontium (Sr)-Total	0.610		0.0010	mg/L	23-SEP-16	23-SEP-16	R3556780
Thallium (Tl)-Total	0.000038		0.000010	mg/L	23-SEP-16	23-SEP-16	R3556780
Tin (Sn)-Total	0.00016		0.00010	mg/L	23-SEP-16	23-SEP-16	R3556780
Vanadium (V)-Total	0.00347		0.00050	mg/L	23-SEP-16	23-SEP-16	R3556780
Zinc (Zn)-Total	0.0061		0.0030	mg/L	23-SEP-16	23-SEP-16	R3556780
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		26-SEP-16	R3557575
Aggregate Organics							
COD	36		10	mg/L		27-SEP-16	R3558508
Phenols (4AAP)	0.0028		0.0010	mg/L		27-SEP-16	R3558578
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-SEP-16	R3557084
Benzene	<0.50		0.50	ug/L		27-SEP-16	R3557084

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-3 EAST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:30 Matrix: WATER							
Volatile Organic Compounds							
Bromodichloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromoform	<1.0		1.0	ug/L		27-SEP-16	R3557084
Bromomethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Carbon tetrachloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
Chlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dibromochloromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Chloroform	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,2-Dibromoethane	<0.20		0.20	ug/L		27-SEP-16	R3557084
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
1,1-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,2-Dichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Dichloromethane	<2.0		2.0	ug/L		27-SEP-16	R3557084
1,2-Dichloropropane	<0.50		0.50	ug/L		27-SEP-16	R3557084
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Ethylbenzene	<0.50		0.50	ug/L		27-SEP-16	R3557084
n-Hexane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Methyl Ethyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
Methyl Isobutyl Ketone	<20		20	ug/L		27-SEP-16	R3557084
MTBE	<0.50		0.50	ug/L		27-SEP-16	R3557084
Styrene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Tetrachloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Toluene	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichloroethylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
Trichlorofluoromethane	<1.0		1.0	ug/L		27-SEP-16	R3557084
Vinyl chloride	<0.50		0.50	ug/L		27-SEP-16	R3557084
o-Xylene	<0.50		0.50	ug/L		27-SEP-16	R3557084
m+p-Xylenes	<1.0		1.0	ug/L		27-SEP-16	R3557084
Xylenes (Total)	<1.1		1.1	ug/L		27-SEP-16	R3557084
Surrogate: 4-Bromofluorobenzene	95.7		70-130	%		27-SEP-16	R3557084

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1833266-3 EAST RETENTION POND Sampled By: CLIENT on 22-SEP-16 @ 08:30 Matrix: WATER							
Volatile Organic Compounds							
Surrogate: 1,4-Difluorobenzene	103.8		70-130	%		27-SEP-16	R3557084
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-SEP-16	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559706
Surrogate: 2,4,6-Tribromophenol	83.8		40-150	%	27-SEP-16	29-SEP-16	R3559706
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Acenaphthylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(a)pyrene	<0.050		0.050	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
4-Chloroaniline	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Chlorophenol	<0.30		0.30	ug/L	27-SEP-16	29-SEP-16	R3559015
Chrysene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dichlorophenol	<0.30		0.30	ug/L	27-SEP-16	29-SEP-16	R3559015
Diethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Dimethylphthalate	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dimethylphenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrophenol	<1.0		1.0	ug/L	27-SEP-16	29-SEP-16	R3559015
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-SEP-16	29-SEP-16	R3559015
Fluoranthene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Fluorene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobenzene	<0.040		0.040	ug/L	27-SEP-16	29-SEP-16	R3559015
Hexachlorobutadiene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
1-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
2-Methylnaphthalene	<0.40		0.40	ug/L	27-SEP-16	29-SEP-16	R3559015
Naphthalene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015
Pentachlorophenol	<0.50		0.50	ug/L	27-SEP-16	29-SEP-16	R3559015
Perylene	<0.20		0.20	ug/L	27-SEP-16	29-SEP-16	R3559015

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Boron (B)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1833266-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1833266-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD.	SW846 8270
625-WT	Water	EPA 8270 Extractables Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.	SW846 8270
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
BR-IC-N-WT	Water	Bromide in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
C-DIS-ORG-WT	Water	Dissolved Organic Carbon Sample is filtered through a 0.45um filter, sample is then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.	APHA 5310 B-INSTRUMENTAL
CL-IC-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
CN-TOT-WT	Water	Cyanide, Total Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.	APHA 4500CN C E-STRONG ACID DIST COLORIM
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COD-T-WT	Water	Chemical Oxygen Demand This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.	APHA 5220 D
CR-CR6-IC-WT	Water	Chromium +6 This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.	EPA 7199
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			

Reference Information

EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-NH3-UNION-CLI-WT	Water	Un-ionized ammonia	CALCULATION
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-CCMS-WT	Water	Total Metals by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH,TEMP-CLIENT-WT	Water	pH & Temperature	Results supplied by client
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PH-WT	Water	pH	MOEE E3137A-R511
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered through glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.			
THM-SUM-PPB-CALC-WT	Water	Total Trihalomethanes (THMs)	CALCULATION
Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			

Reference Information

TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-N
Sample is digested to convert the TKN to ammonium sulphate. The ammonia ions are heated to produce a colour complex. The absorbance measured by the instrument is proportional to the concentration of ammonium sulphate in the sample and is reported as TKN.			
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260
Aqueous samples are analyzed by headspace-GC/MS.			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Environmental

Quality Control Report

Workorder: L1833266

Report Date: 30-SEP-16

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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-ACID-EXTRA-WT	Water							
Batch	R3559706							
WG2397452-2 LCS								
2,3,6-Trichlorophenol			94.2		%		50-130	29-SEP-16
WG2397452-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	29-SEP-16
Surrogate: 2,4,6-Tribromophenol			86.6		%		40-150	29-SEP-16
625-WT	Water							
Batch	R3559015							
WG2397452-2 LCS								
1-Methylnaphthalene			89.8		%		50-140	28-SEP-16
1,2-Dichlorobenzene			80.6		%		40-130	28-SEP-16
1,2,4-Trichlorobenzene			78.9		%		40-130	28-SEP-16
1,3-Dichlorobenzene			76.6		%		50-140	28-SEP-16
1,4-Dichlorobenzene			77.4		%		40-130	28-SEP-16
2-Chlorophenol			94.0		%		50-140	28-SEP-16
2-Methylnaphthalene			84.2		%		50-140	28-SEP-16
2,3,4,5-Tetrachlorophenol			100.6		%		50-140	28-SEP-16
2,3,4,6-Tetrachlorophenol			109.1		%		50-140	28-SEP-16
2,4-Dichlorophenol			96.9		%		50-140	28-SEP-16
2,4-Dimethylphenol			52.2		%		50-140	28-SEP-16
2,4-Dinitrophenol			108.9		%		40-140	28-SEP-16
2,4-Dinitrotoluene			103.7		%		50-140	28-SEP-16
2,4,5-Trichlorophenol			99.4		%		50-140	28-SEP-16
2,4,6-Trichlorophenol			100.4		%		50-140	28-SEP-16
2,6-Dinitrotoluene			98.7		%		50-140	28-SEP-16
3,3'-Dichlorobenzidine			100.7		%		50-140	28-SEP-16
4-Chloroaniline			67.0		%		30-140	28-SEP-16
Acenaphthene			98.9		%		50-140	28-SEP-16
Acenaphthylene			97.3		%		50-140	28-SEP-16
Anthracene			106.7		%		50-140	28-SEP-16
Benzo(a)anthracene			104.5		%		50-140	28-SEP-16
Benzo(a)pyrene			97.2		%		60-130	28-SEP-16
Benzo(b)fluoranthene			95.9		%		50-140	28-SEP-16
Benzo(ghi)perylene			91.1		%		50-140	28-SEP-16
Benzo(k)fluoranthene			94.3		%		50-140	28-SEP-16
Bis(2-chloroethyl)ether			88.1		%		50-140	28-SEP-16



Quality Control Report

Workorder: L1833266

Report Date: 30-SEP-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3559015							
WG2397452-2 LCS								
Bis(2-ethylhexyl)phthalate			120.1		%		50-140	28-SEP-16
Chrysene			102.2		%		50-140	28-SEP-16
Dibenzo(a,h)anthracene			89.9		%		50-140	28-SEP-16
Diethylphthalate			99.97		%		50-140	28-SEP-16
Dimethylphthalate			90.7		%		50-140	28-SEP-16
Fluoranthene			106.7		%		50-140	28-SEP-16
Fluorene			98.4		%		50-140	28-SEP-16
Hexachlorobenzene			92.7		%		40-130	28-SEP-16
Hexachlorobutadiene			65.0		%		40-130	28-SEP-16
Indeno(1,2,3-cd)pyrene			98.0		%		50-140	28-SEP-16
Naphthalene			89.4		%		50-140	28-SEP-16
Pentachlorophenol			110.7		%		50-140	28-SEP-16
Perylene			85.7		%		50-140	28-SEP-16
Phenanthrene			100.3		%		50-140	28-SEP-16
Pyrene			105.0		%		50-140	28-SEP-16
WG2397452-3 LCSD		WG2397452-2						
1-Methylnaphthalene		89.8	90.0		%	0.2	50	28-SEP-16
1,2-Dichlorobenzene		80.6	78.5		%	2.6	50	28-SEP-16
1,2,4-Trichlorobenzene		78.9	77.2		%	2.1	50	28-SEP-16
1,3-Dichlorobenzene		76.6	75.6		%	1.3	50	28-SEP-16
1,4-Dichlorobenzene		77.4	77.0		%	0.6	50	28-SEP-16
2-Chlorophenol		94.0	95.4		%	1.6	50	28-SEP-16
2-Methylnaphthalene		84.2	84.2		%	0.1	50	28-SEP-16
2,3,4,5-Tetrachlorophenol		100.6	104.1		%	3.4	50	28-SEP-16
2,3,4,6-Tetrachlorophenol		109.1	108.6		%	0.5	50	28-SEP-16
2,4-Dichlorophenol		96.9	99.5		%	2.6	50	28-SEP-16
2,4-Dimethylphenol		52.2	81.7		%	44	50	28-SEP-16
2,4-Dinitrophenol		108.9	118.9		%	8.8	50	28-SEP-16
2,4-Dinitrotoluene		103.7	106.5		%	2.7	50	28-SEP-16
2,4,5-Trichlorophenol		99.4	100.8		%	1.3	50	28-SEP-16
2,4,6-Trichlorophenol		100.4	101.9		%	1.5	50	28-SEP-16
2,6-Dinitrotoluene		98.7	100.3		%	1.6	50	28-SEP-16
3,3'-Dichlorobenzidine		100.7	98.9		%	1.8	50	28-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3559015							
WG2397452-3	LCSD	WG2397452-2						
4-Chloroaniline		67.0	71.0		%	5.7	50	28-SEP-16
Acenaphthene		98.9	100.0		%	1.1	50	28-SEP-16
Acenaphthylene		97.3	98.5		%	1.3	50	28-SEP-16
Anthracene		106.7	108.6		%	1.8	50	28-SEP-16
Benzo(a)anthracene		104.5	105.0		%	0.5	50	28-SEP-16
Benzo(a)pyrene		97.2	100.8		%	3.6	50	28-SEP-16
Benzo(b)fluoranthene		95.9	99.7		%	3.9	50	28-SEP-16
Benzo(ghi)perylene		91.1	92.6		%	1.6	50	28-SEP-16
Benzo(k)fluoranthene		94.3	96.8		%	2.6	50	28-SEP-16
Bis(2-chloroethyl)ether		88.1	90.7		%	3.0	50	28-SEP-16
Bis(2-ethylhexyl)phthalate		120.1	116.2		%	3.3	50	28-SEP-16
Chrysene		102.2	104.6		%	2.3	50	28-SEP-16
Dibenzo(a,h)anthracene		89.9	91.2		%	1.5	50	28-SEP-16
Diethylphthalate		99.97	101.2		%	1.3	50	28-SEP-16
Dimethylphthalate		90.7	92.2		%	1.6	50	28-SEP-16
Fluoranthene		106.7	106.2		%	0.5	50	28-SEP-16
Fluorene		98.4	99.7		%	1.3	50	28-SEP-16
Hexachlorobenzene		92.7	95.4		%	2.8	50	28-SEP-16
Hexachlorobutadiene		65.0	67.2		%	3.3	50	28-SEP-16
Indeno(1,2,3-cd)pyrene		98.0	100.1		%	2.2	50	28-SEP-16
Naphthalene		89.4	88.1		%	1.4	50	28-SEP-16
Pentachlorophenol		110.7	112.0		%	1.2	50	28-SEP-16
Perylene		85.7	88.2		%	2.9	50	28-SEP-16
Phenanthrene		100.3	101.9		%	1.6	50	28-SEP-16
Pyrene		105.0	105.0		%	0.0	50	28-SEP-16
WG2397452-1	MB							
1-Methylnaphthalene			<0.40		ug/L		0.4	28-SEP-16
1,2-Dichlorobenzene			<0.40		ug/L		0.4	28-SEP-16
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	28-SEP-16
1,3-Dichlorobenzene			<0.40		ug/L		0.4	28-SEP-16
1,4-Dichlorobenzene			<0.40		ug/L		0.4	28-SEP-16
2-Chlorophenol			<0.30		ug/L		0.3	28-SEP-16
2-Methylnaphthalene			<0.40		ug/L		0.4	28-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	Water							
Batch	R3559015							
WG2397452-1 MB								
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	28-SEP-16
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	28-SEP-16
2,4-Dichlorophenol			<0.30		ug/L		0.3	28-SEP-16
2,4-Dimethylphenol			<0.50		ug/L		0.5	28-SEP-16
2,4-Dinitrophenol			<1.0		ug/L		1	28-SEP-16
2,4-Dinitrotoluene			<0.40		ug/L		0.4	28-SEP-16
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	28-SEP-16
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	28-SEP-16
2,6-Dinitrotoluene			<0.40		ug/L		0.4	28-SEP-16
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	28-SEP-16
4-Chloroaniline			<0.40		ug/L		0.4	28-SEP-16
Acenaphthene			<0.20		ug/L		0.2	28-SEP-16
Acenaphthylene			<0.20		ug/L		0.2	28-SEP-16
Anthracene			<0.20		ug/L		0.2	28-SEP-16
Benzo(a)anthracene			<0.20		ug/L		0.2	28-SEP-16
Benzo(a)pyrene			<0.050		ug/L		0.05	28-SEP-16
Benzo(b)fluoranthene			<0.20		ug/L		0.2	28-SEP-16
Benzo(ghi)perylene			<0.20		ug/L		0.2	28-SEP-16
Benzo(k)fluoranthene			<0.20		ug/L		0.2	28-SEP-16
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	28-SEP-16
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	28-SEP-16
Chrysene			<0.20		ug/L		0.2	28-SEP-16
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	28-SEP-16
Diethylphthalate			<0.20		ug/L		0.2	28-SEP-16
Dimethylphthalate			<0.20		ug/L		0.2	28-SEP-16
Fluoranthene			<0.20		ug/L		0.2	28-SEP-16
Fluorene			<0.20		ug/L		0.2	28-SEP-16
Hexachlorobenzene			<0.040		ug/L		0.04	28-SEP-16
Hexachlorobutadiene			<0.20		ug/L		0.2	28-SEP-16
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	28-SEP-16
Naphthalene			<0.20		ug/L		0.2	28-SEP-16
Pentachlorophenol			<0.50		ug/L		0.5	28-SEP-16
Perylene			<0.20		ug/L		0.2	28-SEP-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT Water								
Batch R3559015								
WG2397452-1 MB								
Phenanthrene			<0.20		ug/L		0.2	28-SEP-16
Pyrene			<0.20		ug/L		0.2	28-SEP-16
Surrogate: 2-Fluorobiphenyl			90.1		%		40-130	28-SEP-16
Surrogate: Nitrobenzene d5			93.7		%		50-130	28-SEP-16
Surrogate: p-Terphenyl d14			108.5		%		40-130	28-SEP-16
ALK-WT Water								
Batch R3559371								
WG2399325-3 CRM WT-ALK-CRM								
Alkalinity, Total (as CaCO3)			80.3		%		80-120	28-SEP-16
WG2399325-4 DUP L1833204-1								
Alkalinity, Total (as CaCO3)		474	484		mg/L	2.1	20	28-SEP-16
WG2399325-2 LCS								
Alkalinity, Total (as CaCO3)			100.4		%		85-115	28-SEP-16
WG2399325-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	28-SEP-16
BR-IC-N-WT Water								
Batch R3558487								
WG2396830-14 DUP L1833266-2								
Bromide (Br)		0.46	0.49		mg/L	6.0	20	26-SEP-16
WG2396830-12 LCS								
Bromide (Br)			97.0		%		85-115	26-SEP-16
WG2396830-11 MB								
Bromide (Br)			<0.10		mg/L		0.1	26-SEP-16
WG2396830-13 MS L1833266-2								
Bromide (Br)			85.0		%		75-125	26-SEP-16
C-DIS-ORG-WT Water								
Batch R3557460								
WG2396584-7 DUP L1832641-22								
Dissolved Organic Carbon		1.1	<1.0	RPD-NA	mg/L	N/A	20	25-SEP-16
WG2396584-6 LCS								
Dissolved Organic Carbon			101.6		%		80-120	25-SEP-16
WG2396584-5 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	25-SEP-16
WG2396584-8 MS L1832641-22								
Dissolved Organic Carbon			99.1		%		70-130	25-SEP-16
CL-IC-WT Water								



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651 COLBY DRIVE
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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-WT		Water						
Batch	R3558487							
WG2396830-14	DUP	L1833266-2						
Chloride (Cl)		33.0	32.9		mg/L	0.1	25	26-SEP-16
WG2396830-12	LCS							
Chloride (Cl)			100.7		%		70-130	26-SEP-16
WG2396830-11	MB							
Chloride (Cl)			<0.50		mg/L		0.5	26-SEP-16
WG2396830-13	MS	L1833266-2						
Chloride (Cl)			99.9		%		70-130	26-SEP-16
CN-TOT-WT		Water						
Batch	R3557795							
WG2397515-7	DUP	L1831943-7						
Cyanide, Total		0.0388	0.0397		mg/L	2.3	20	26-SEP-16
WG2397515-6	LCS							
Cyanide, Total			88.1		%		80-120	26-SEP-16
WG2397515-5	MB							
Cyanide, Total			<0.0020		mg/L		0.002	26-SEP-16
WG2397515-8	MS	L1831943-7						
Cyanide, Total			97.5		%		70-130	26-SEP-16
COD-T-WT		Water						
Batch	R3558508							
WG2398356-3	DUP	L1833841-14						
COD		19	24	J	mg/L	4	20	27-SEP-16
WG2398356-2	LCS							
COD			92.0		%		85-115	27-SEP-16
WG2398356-1	MB							
COD			<10		mg/L		10	27-SEP-16
WG2398356-4	MS	L1833841-14						
COD			100.9		%		75-125	27-SEP-16
CR-CR6-IC-WT		Water						
Batch	R3557575							
WG2396947-4	DUP	WG2396947-3						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-SEP-16
WG2396947-2	LCS							
Chromium, Hexavalent			102.7		%		80-120	26-SEP-16
WG2396947-1	MB							
Chromium, Hexavalent			<0.0010		mg/L		0.001	26-SEP-16
WG2396947-5	MS	WG2396947-3						



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651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT								
Batch R3557575								
WG2396947-5	MS	WG2396947-3						
Chromium, Hexavalent			103.0		%		70-130	26-SEP-16
EC-WT								
Batch R3556174								
WG2395157-4	DUP	WG2395157-3						
Conductivity		412	410		umhos/cm	0.5	10	23-SEP-16
WG2395157-2	LCS		99.4		%		90-110	23-SEP-16
Conductivity								
WG2395157-1	MB		<3.0		umhos/cm		3	23-SEP-16
Conductivity								
F-IC-N-WT								
Batch R3558487								
WG2396830-14	DUP	L1833266-2						
Fluoride (F)		0.816	0.816		mg/L	0.0	20	26-SEP-16
WG2396830-12	LCS		97.3		%		90-110	26-SEP-16
Fluoride (F)								
WG2396830-11	MB		<0.020		mg/L		0.02	26-SEP-16
Fluoride (F)								
WG2396830-13	MS	L1833266-2						
Fluoride (F)			92.4		%		75-125	26-SEP-16
HG-T-CVAA-WT								
Batch R3557063								
WG2396748-4	DUP	WG2396748-3						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-SEP-16
WG2396748-2	LCS		97.6		%		80-120	26-SEP-16
Mercury (Hg)-Total								
WG2396748-1	MB		<0.000010		mg/L		0.00001	26-SEP-16
Mercury (Hg)-Total								
WG2396748-6	MS	WG2396748-5						
Mercury (Hg)-Total			89.0		%		70-130	26-SEP-16
MET-T-CCMS-WT								
Batch R3556780								
WG2395567-4	DUP	WG2395567-3						
Aluminum (Al)-Total		0.043	0.045		mg/L	2.9	20	23-SEP-16
Antimony (Sb)-Total		0.00044	0.00045		mg/L	2.5	20	23-SEP-16
Arsenic (As)-Total		0.00213	0.00213		mg/L	0.3	20	23-SEP-16



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT		Water						
Batch	R3556780							
WG2395567-4	DUP	WG2395567-3						
Barium (Ba)-Total		0.0405	0.0423		mg/L	4.4	20	23-SEP-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-16
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-16
Boron (B)-Total		0.120	0.121		mg/L	0.7	20	23-SEP-16
Cadmium (Cd)-Total		0.000025	0.000025		mg/L	2.1	20	23-SEP-16
Calcium (Ca)-Total		62.0	62.0		mg/L	0.1	20	23-SEP-16
Cobalt (Co)-Total		0.00010	0.00011		mg/L	6.3	20	23-SEP-16
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-SEP-16
Iron (Fe)-Total		0.050	0.050		mg/L	0.5	20	23-SEP-16
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-16
Magnesium (Mg)-Total		16.1	16.0		mg/L	0.8	20	23-SEP-16
Manganese (Mn)-Total		0.0194	0.0192		mg/L	0.8	20	23-SEP-16
Molybdenum (Mo)-Total		0.0637	0.0645		mg/L	1.4	20	23-SEP-16
Nickel (Ni)-Total		0.00161	0.00158		mg/L	1.4	20	23-SEP-16
Potassium (K)-Total		3.85	3.85		mg/L	0.0	20	23-SEP-16
Selenium (Se)-Total		0.00123	0.00120		mg/L	2.1	20	23-SEP-16
Silicon (Si)-Total		1.01	1.05		mg/L	3.7	20	23-SEP-16
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-16
Sodium (Na)-Total		23.9	24.1		mg/L	0.5	20	23-SEP-16
Strontium (Sr)-Total		0.533	0.542		mg/L	1.7	20	23-SEP-16
Thallium (Tl)-Total		0.000019	0.000016		mg/L	15	20	23-SEP-16
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-16
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-16
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-SEP-16
WG2395567-2	LCS							
Aluminum (Al)-Total			92.3		%		80-120	23-SEP-16
Antimony (Sb)-Total			98.8		%		80-120	23-SEP-16
Arsenic (As)-Total			93.8		%		80-120	23-SEP-16
Barium (Ba)-Total			94.4		%		80-120	23-SEP-16
Beryllium (Be)-Total			94.0		%		80-120	23-SEP-16
Bismuth (Bi)-Total			93.8		%		80-120	23-SEP-16
Boron (B)-Total			90.6		%		80-120	23-SEP-16
Cadmium (Cd)-Total			93.3		%		80-120	23-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT		Water						
Batch	R3556780							
WG2395567-2 LCS								
Calcium (Ca)-Total			96.3		%		80-120	23-SEP-16
Cobalt (Co)-Total			94.9		%		80-120	23-SEP-16
Copper (Cu)-Total			94.4		%		80-120	23-SEP-16
Iron (Fe)-Total			90.7		%		80-120	23-SEP-16
Lead (Pb)-Total			98.0		%		80-120	23-SEP-16
Magnesium (Mg)-Total			95.3		%		80-120	23-SEP-16
Manganese (Mn)-Total			94.0		%		80-120	23-SEP-16
Molybdenum (Mo)-Total			95.5		%		80-120	23-SEP-16
Nickel (Ni)-Total			93.8		%		80-120	23-SEP-16
Potassium (K)-Total			91.3		%		80-120	23-SEP-16
Selenium (Se)-Total			93.4		%		80-120	23-SEP-16
Silicon (Si)-Total			106.1		%		80-120	26-SEP-16
Silver (Ag)-Total			97.7		%		80-120	23-SEP-16
Sodium (Na)-Total			94.0		%		80-120	23-SEP-16
Strontium (Sr)-Total			94.4		%		80-120	23-SEP-16
Thallium (Tl)-Total			93.4		%		80-120	23-SEP-16
Tin (Sn)-Total			94.4		%		80-120	23-SEP-16
Vanadium (V)-Total			95.2		%		80-120	23-SEP-16
Zinc (Zn)-Total			92.0		%		80-120	23-SEP-16
WG2395567-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	23-SEP-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Barium (Ba)-Total			<0.00020		mg/L		0.0002	23-SEP-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-SEP-16
Boron (B)-Total			<0.010		mg/L		0.01	23-SEP-16
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	23-SEP-16
Calcium (Ca)-Total			<0.50		mg/L		0.5	23-SEP-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Copper (Cu)-Total			<0.0010		mg/L		0.001	23-SEP-16
Iron (Fe)-Total			<0.050		mg/L		0.05	23-SEP-16
Lead (Pb)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Magnesium (Mg)-Total			<0.050		mg/L		0.05	23-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2
 Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT								
	Water							
Batch	R3556780							
WG2395567-1	MB							
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	23-SEP-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-SEP-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-SEP-16
Potassium (K)-Total			<0.050		mg/L		0.05	23-SEP-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-SEP-16
Silicon (Si)-Total			<0.050		mg/L		0.05	23-SEP-16
Silver (Ag)-Total			<0.000050		mg/L		0.00005	23-SEP-16
Sodium (Na)-Total			<0.50		mg/L		0.5	23-SEP-16
Strontium (Sr)-Total			<0.0010		mg/L		0.001	23-SEP-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-SEP-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-SEP-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-SEP-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-SEP-16
WG2395567-5	MS	WG2395567-3						
Aluminum (Al)-Total			97.4		%		70-130	23-SEP-16
Antimony (Sb)-Total			105.6		%		70-130	23-SEP-16
Arsenic (As)-Total			96.4		%		70-130	23-SEP-16
Barium (Ba)-Total			N/A	MS-B	%		-	23-SEP-16
Beryllium (Be)-Total			94.8		%		70-130	23-SEP-16
Bismuth (Bi)-Total			93.7		%		70-130	23-SEP-16
Boron (B)-Total			N/A	MS-B	%		-	23-SEP-16
Cadmium (Cd)-Total			96.5		%		70-130	23-SEP-16
Calcium (Ca)-Total			N/A	MS-B	%		-	23-SEP-16
Cobalt (Co)-Total			92.9		%		70-130	23-SEP-16
Copper (Cu)-Total			97.6		%		70-130	23-SEP-16
Iron (Fe)-Total			N/A	MS-B	%		-	23-SEP-16
Lead (Pb)-Total			97.5		%		70-130	23-SEP-16
Magnesium (Mg)-Total			N/A	MS-B	%		-	23-SEP-16
Manganese (Mn)-Total			N/A	MS-B	%		-	23-SEP-16
Molybdenum (Mo)-Total			N/A	MS-B	%		-	23-SEP-16
Nickel (Ni)-Total			92.4		%		70-130	23-SEP-16
Potassium (K)-Total			N/A	MS-B	%		-	23-SEP-16
Selenium (Se)-Total			97.2		%		70-130	23-SEP-16
Silicon (Si)-Total			N/A	MS-B	%		-	23-SEP-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT		Water						
Batch	R3556780							
WG2395567-5	MS	WG2395567-3						
Silver (Ag)-Total			98.7		%		70-130	23-SEP-16
Sodium (Na)-Total			N/A	MS-B	%		-	23-SEP-16
Strontium (Sr)-Total			N/A	MS-B	%		-	23-SEP-16
Thallium (Tl)-Total			95.5		%		70-130	23-SEP-16
Tin (Sn)-Total			98.2		%		70-130	23-SEP-16
Vanadium (V)-Total			98.9		%		70-130	23-SEP-16
Zinc (Zn)-Total			98.5		%		70-130	23-SEP-16
NH3-WT		Water						
Batch	R3557982							
WG2396663-7	DUP	L1833508-4						
Ammonia, Total (as N)		0.035	0.034		mg/L	1.9	20	26-SEP-16
WG2396663-6	LCS							
Ammonia, Total (as N)			94.3		%		85-115	26-SEP-16
WG2396663-5	MB							
Ammonia, Total (as N)			<0.020		mg/L		0.02	26-SEP-16
WG2396663-8	MS	L1833508-4						
Ammonia, Total (as N)			93.8		%		75-125	26-SEP-16
Batch	R3558083							
WG2397508-3	DUP	L1832543-4						
Ammonia, Total (as N)		0.035	0.035		mg/L	1.1	20	27-SEP-16
WG2397508-7	DUP	L1834214-2						
Ammonia, Total (as N)		0.034	0.038		mg/L	12	20	27-SEP-16
WG2397508-2	LCS							
Ammonia, Total (as N)			97.9		%		85-115	27-SEP-16
WG2397508-6	LCS							
Ammonia, Total (as N)			96.4		%		85-115	27-SEP-16
WG2397508-1	MB							
Ammonia, Total (as N)			<0.020		mg/L		0.02	27-SEP-16
WG2397508-5	MB							
Ammonia, Total (as N)			<0.020		mg/L		0.02	27-SEP-16
WG2397508-4	MS	L1832543-4						
Ammonia, Total (as N)			94.8		%		75-125	27-SEP-16
WG2397508-8	MS	L1834214-2						
Ammonia, Total (as N)			93.2		%		75-125	27-SEP-16
NO2-IC-WT	Water							



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT		Water						
Batch	R3558487							
WG2396830-14	DUP	L1833266-2						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	26-SEP-16
WG2396830-12	LCS							
Nitrite (as N)			101.3		%		70-130	26-SEP-16
WG2396830-11	MB							
Nitrite (as N)			<0.010		mg/L		0.01	26-SEP-16
WG2396830-13	MS	L1833266-2						
Nitrite (as N)			104.2		%		70-130	26-SEP-16
NO3-IC-WT		Water						
Batch	R3558487							
WG2396830-14	DUP	L1833266-2						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	26-SEP-16
WG2396830-12	LCS							
Nitrate (as N)			100.1		%		70-130	26-SEP-16
WG2396830-11	MB							
Nitrate (as N)			<0.020		mg/L		0.02	26-SEP-16
WG2396830-13	MS	L1833266-2						
Nitrate (as N)			102.1		%		70-130	26-SEP-16
P-T-COL-WT		Water						
Batch	R3557493							
WG2396614-3	DUP	L1833266-2						
Phosphorus, Total		0.0217	0.0237		mg/L	8.8	20	27-SEP-16
WG2396614-2	LCS							
Phosphorus, Total			103.4		%		80-120	26-SEP-16
WG2396614-1	MB							
Phosphorus, Total			<0.0030		mg/L		0.003	27-SEP-16
WG2396614-4	MS	L1833266-2						
Phosphorus, Total			88.2		%		70-130	26-SEP-16
PH-WT		Water						
Batch	R3556173							
WG2395149-9	DUP	WG2395149-8						
pH		7.49	7.48	J	pH units	0.01	0.2	23-SEP-16
WG2395149-7	LCS							
pH			7.00		pH units		6.9-7.1	23-SEP-16
PHENOLS-4AAP-WT		Water						



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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT								
Water								
Batch	R3558578							
WG2398002-11	DUP	L1832773-1						
Phenols (4AAP)		0.0017	0.0016		mg/L	3.7	20	27-SEP-16
WG2398002-10	LCS							
Phenols (4AAP)			107.0		%		85-115	27-SEP-16
WG2398002-9	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	27-SEP-16
WG2398002-12	MS	L1832773-1						
Phenols (4AAP)			99.8		%		75-125	27-SEP-16
SO4-IC-N-WT								
Water								
Batch	R3558487							
WG2396830-14	DUP	L1833266-2						
Sulfate (SO4)		126	126		mg/L	0.2	20	26-SEP-16
WG2396830-12	LCS							
Sulfate (SO4)			101.4		%		90-110	26-SEP-16
WG2396830-11	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-SEP-16
WG2396830-13	MS	L1833266-2						
Sulfate (SO4)			N/A	MS-B	%		-	26-SEP-16
SOLIDS-TDS-WT								
Water								
Batch	R3557757							
WG2396170-3	DUP	L1832875-1						
Total Dissolved Solids		2300	2270		mg/L	1.4	20	24-SEP-16
WG2396170-2	LCS							
Total Dissolved Solids			101.7		%		85-115	24-SEP-16
WG2396170-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-SEP-16
SOLIDS-TSS-WT								
Water								
Batch	R3558771							
WG2398135-3	DUP	L1834965-3						
Total Suspended Solids		2650	2850		mg/L	7.3	20	28-SEP-16
WG2398135-2	LCS							
Total Suspended Solids			98.4		%		85-115	28-SEP-16
WG2398135-1	MB							
Total Suspended Solids			<2.0		mg/L		2	28-SEP-16



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 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-WT		Water						
Batch	R3559693							
WG2398690-3 DUP		L1833448-1						
Total Suspended Solids		2730	3070		mg/L	11	20	29-SEP-16
WG2398690-2 LCS			99.6		%		85-115	29-SEP-16
Total Suspended Solids								
WG2398690-1 MB			<2.0		mg/L		2	29-SEP-16
Total Suspended Solids								
TKN-WT		Water						
Batch	R3557467							
WG2396694-3 DUP		L1833077-1						
Total Kjeldahl Nitrogen		1.58	1.61		mg/L	1.7	20	26-SEP-16
WG2396694-2 LCS			94.9		%		75-125	26-SEP-16
Total Kjeldahl Nitrogen								
WG2396694-1 MB			<0.15		mg/L		0.15	26-SEP-16
Total Kjeldahl Nitrogen								
WG2396694-4 MS		L1833077-1	113.5		%		70-130	26-SEP-16
Total Kjeldahl Nitrogen								
Batch	R3560670							
WG2399634-3 DUP		L1835261-1						
Total Kjeldahl Nitrogen		1.80	1.77		mg/L	1.3	20	29-SEP-16
WG2399634-2 LCS			101.7		%		75-125	29-SEP-16
Total Kjeldahl Nitrogen								
WG2399634-1 MB			<0.15		mg/L		0.15	29-SEP-16
Total Kjeldahl Nitrogen								
WG2399634-4 MS		L1835261-1	96.8		%		70-130	29-SEP-16
Total Kjeldahl Nitrogen								
VOC-ROU-HS-WT		Water						
Batch	R3557084							
WG2393290-4 DUP		WG2393290-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	27-SEP-16
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3557084							
WG2393290-4	DUP	WG2393290-3						
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	27-SEP-16
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-SEP-16
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-SEP-16
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-SEP-16
Vinyl chloride		<0.50	<0.50		ug/L			27-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT								
	Water							
Batch	R3557084							
WG2393290-4	DUP	WG2393290-3						
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-SEP-16
WG2393290-1	LCS							
1,1,1,2-Tetrachloroethane			95.5		%		70-130	26-SEP-16
1,1,2,2-Tetrachloroethane			82.0		%		70-130	26-SEP-16
1,1,1-Trichloroethane			107.5		%		70-130	26-SEP-16
1,1,2-Trichloroethane			86.5		%		70-130	26-SEP-16
1,2-Dibromoethane			81.8		%		70-130	26-SEP-16
1,1-Dichloroethane			99.2		%		70-130	26-SEP-16
1,1-Dichloroethylene			105.1		%		70-130	26-SEP-16
1,2-Dichlorobenzene			95.7		%		70-130	26-SEP-16
1,2-Dichloroethane			89.1		%		70-130	26-SEP-16
1,2-Dichloropropane			92.4		%		70-130	26-SEP-16
1,3-Dichlorobenzene			100.5		%		70-130	26-SEP-16
1,4-Dichlorobenzene			100.0		%		70-130	26-SEP-16
Acetone			88.9		%		60-140	26-SEP-16
Benzene			99.0		%		70-130	26-SEP-16
Bromodichloromethane			90.6		%		70-130	26-SEP-16
Bromoform			84.3		%		70-130	26-SEP-16
Bromomethane			108.7		%		60-140	26-SEP-16
Carbon tetrachloride			107.6		%		70-130	26-SEP-16
Chlorobenzene			99.0		%		70-130	26-SEP-16
Chloroethane			109.3		%		70-130	26-SEP-16
Chloroform			107.8		%		70-130	26-SEP-16
cis-1,2-Dichloroethylene			96.3		%		70-130	26-SEP-16
cis-1,3-Dichloropropene			85.4		%		70-130	26-SEP-16
Dibromochloromethane			93.4		%		70-130	26-SEP-16
Dichlorodifluoromethane			125.4		%		50-140	26-SEP-16
Dichloromethane			99.7		%		70-130	26-SEP-16
Ethylbenzene			92.9		%		70-130	26-SEP-16
m+p-Xylenes			101.8		%		70-130	26-SEP-16
Methyl Ethyl Ketone			73.2		%		60-140	26-SEP-16
Methyl Isobutyl Ketone			72.3		%		50-150	26-SEP-16
n-Hexane			115.5		%		70-130	26-SEP-16
MTBE			98.2		%		70-130	26-SEP-16



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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3557084							
WG2393290-1	LCS							
o-Xylene			91.1		%		70-130	26-SEP-16
Styrene			85.0		%		70-130	26-SEP-16
Tetrachloroethylene			110.2		%		70-130	26-SEP-16
Toluene			97.0		%		70-130	26-SEP-16
trans-1,2-Dichloroethylene			106.3		%		70-130	26-SEP-16
trans-1,3-Dichloropropene			86.3		%		70-130	26-SEP-16
Trichloroethylene			102.4		%		70-130	26-SEP-16
Trichlorofluoromethane			118.0		%		60-140	26-SEP-16
Vinyl chloride			108.1		%		60-140	26-SEP-16
WG2393290-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	27-SEP-16
1,1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	27-SEP-16
1,1,1-Trichloroethane			<0.50		ug/L		0.5	27-SEP-16
1,1,2-Trichloroethane			<0.50		ug/L		0.5	27-SEP-16
1,2-Dibromoethane			<0.20		ug/L		0.2	27-SEP-16
1,1-Dichloroethane			<0.50		ug/L		0.5	27-SEP-16
1,1-Dichloroethylene			<0.50		ug/L		0.5	27-SEP-16
1,2-Dichlorobenzene			<0.50		ug/L		0.5	27-SEP-16
1,2-Dichloroethane			<0.50		ug/L		0.5	27-SEP-16
1,2-Dichloropropane			<0.50		ug/L		0.5	27-SEP-16
1,3-Dichlorobenzene			<0.50		ug/L		0.5	27-SEP-16
1,4-Dichlorobenzene			<0.50		ug/L		0.5	27-SEP-16
Acetone			<20		ug/L		20	27-SEP-16
Benzene			<0.50		ug/L		0.5	27-SEP-16
Bromodichloromethane			<1.0		ug/L		1	27-SEP-16
Bromoform			<1.0		ug/L		1	27-SEP-16
Bromomethane			<0.50		ug/L		0.5	27-SEP-16
Carbon tetrachloride			<0.50		ug/L		0.5	27-SEP-16
Chlorobenzene			<0.50		ug/L		0.5	27-SEP-16
Chloroethane			<1.0		ug/L		1	27-SEP-16
Chloroform			<1.0		ug/L		1	27-SEP-16
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-SEP-16
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	27-SEP-16
Dibromochloromethane			<1.0		ug/L		1	27-SEP-16



Quality Control Report

Workorder: L1833266

Report Date: 30-SEP-16

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Client: GHD Limited (Waterloo)
 651 COLBY DRIVE
 WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT		Water						
Batch	R3557084							
WG2393290-2 MB								
Dichlorodifluoromethane			<1.0		ug/L		1	27-SEP-16
Dichloromethane			<2.0		ug/L		2	27-SEP-16
Ethylbenzene			<0.50		ug/L		0.5	27-SEP-16
m+p-Xylenes			<1.0		ug/L		1	27-SEP-16
Methyl Ethyl Ketone			<20		ug/L		20	27-SEP-16
Methyl Isobutyl Ketone			<20		ug/L		20	27-SEP-16
n-Hexane			<0.50		ug/L		0.5	27-SEP-16
MTBE			<0.50		ug/L		0.5	27-SEP-16
o-Xylene			<0.50		ug/L		0.5	27-SEP-16
Styrene			<0.50		ug/L		0.5	27-SEP-16
Tetrachloroethylene			<0.50		ug/L		0.5	27-SEP-16
Toluene			<0.50		ug/L		0.5	27-SEP-16
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-SEP-16
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	27-SEP-16
Trichloroethylene			<0.50		ug/L		0.5	27-SEP-16
Trichlorofluoromethane			<1.0		ug/L		1	27-SEP-16
Vinyl chloride			<0.50		ug/L		0.5	27-SEP-16
Surrogate: 1,4-Difluorobenzene			101.3		%		70-130	27-SEP-16
Surrogate: 4-Bromofluorobenzene			89.3		%		70-130	27-SEP-16

Quality Control Report

Workorder: L1833266

Report Date: 30-SEP-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L1833266-CGFC

www.alsglobal.com

Report To	Acct#13791	Report Form	Below (Rush Turnaround Time (TAT) is not available for all tests)	
Company: GHD LIMITED		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	R	<input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)
Contact: Jennifer Balkwill		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	P	<input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address: 651 Colby Drive, Waterloo, Ontario N2V 1C2		<input type="checkbox"/> Criteria on Report - provide details below if box checked	E	<input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
Phone: 519-884-7780		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	E2	<input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax Jennifer.Balkwill@ghd.com	Specify Date Required for E2,E or P:	
		Email 2 See PO	Analysis Request	

Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Copy of Invoice with Report <input type="checkbox"/> Yes <input type="checkbox"/> No	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX	ALK, Conductivity, pH, TDS, TSS, Phenols	
Company: GHD LIMITED	Email 1 or Fax Jennifer.Balkwill@ghd.com	Br, NO2, NO3, SO4, Cl, F (ANIONS-IC-6-WT)	
Contact: Jennifer Balkwill	Email 2	DOC (C-DIS-ORG-WT), COD, TKN, TP	
Project Information	Oil and Gas Required Fields (client use)	Total CN (CN-TOT-WT)	
ALS Quote #: 44985	Approved ID: [blacked out]	Un-ionized NH3 (ETL-NH3-UNION-CL-WT)	
Job #: 44985	Cost Center: [blacked out]	Total Metals (MET-T-MS-WT, WT-44985-Metals)	
PO / AFE: 73503080	Routing Code: [blacked out]	Total Mercury (HG-T-CVAA-WT)	
LSD:		Total Cr & (CR-CR6-IC-WT), Hardness calc	
ALS Lab Work Order # (lab use only) U834266 2/15	ALS Contact: L.Ermeta	VOCs (VOC-ROU-HS-WT, WT-44985-VOC)	
	Sampler:	SVOCs (SVOC-44985-P-WT)	

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK, Conductivity, pH, TDS, TSS, Phenols	Br, NO2, NO3, SO4, Cl, F (ANIONS-IC-6-WT)	DOC (C-DIS-ORG-WT), COD, TKN, TP	Total CN (CN-TOT-WT)	Un-ionized NH3 (ETL-NH3-UNION-CL-WT)	Total Metals (MET-T-MS-WT, WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr & (CR-CR6-IC-WT), Hardness calc	VOCs (VOC-ROU-HS-WT, WT-44985-VOC)	SVOCs (SVOC-44985-P-WT)	CLIENT SUPPLIED TEMPERATURE **	CLIENT SUPPLIED pH **	Number of Containers
2	EQ POND	22/09/16	08:00	Water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	21.7°C	7.7	14
2	West Retention Pond	"	08:15	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	21.8°C	7.9	14
3	East Retention Pond	"	08:30	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	21.7°C	7.7	14

Drinking Water (DW) Samples¹ (client use)	Special Instructions / Specify Criteria to add on report (client Use)	SAMPLE CONDITIONS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation	Frozen <input type="checkbox"/>	SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/>	Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>
		COOLING INITIATED <input type="checkbox"/>	
		INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
			9.6
SHIPMENT RELEASE (client use)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: R. Tobin	Date: Sept 22/16	Time: 11:30	Received by: [Signature]
			Date: 23 Sep 16
			Time: 9:00

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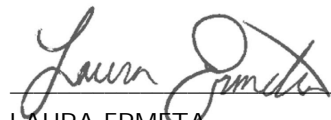
GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 27-SEP-16
Report Date: 28-SEP-16 10:01 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1834706
Project P.O. #: 73503080
Job Reference: 44985
C of C Numbers:
Legal Site Desc:


LAURA ERMETA
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MICROTOX-ORG-CL	Water	Microtox Original	AEC Microbiological Methods
		Light output of luminescent bacteria is measured after they have been challenged by a sample of unknown toxicity, and compared to the light output of a control reagent blank. The difference in light output is attributed to the effect of the sample on the organisms, and the degree of light loss indicates metabolic inhibition and the degree of toxicity of the sample to the bacteria. EC50(5) and EC50(15) values are reported, and refer to the effective concentration of the sample that caused a 50% decrease in the light output in 5 and 15 minutes	
MICROTOX-PHYSICAL-CL	Water	Microtox Physical Tests	WCMUC (1991)

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Environmental

Quality Control Report

Workorder: L1834706

Report Date: 28-SEP-16

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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MICROTOX-ORG-CL								
	Water							
Batch	R3558336							
WG2398196-2 CRM		PHENOL_CL						
EC50 (5min) Original			16.0		mg/L		13-26	27-SEP-16
WG2398196-3 CRM		PHENOL_CL						
EC50 (5min) Original			13.9		mg/L		13-26	27-SEP-16
WG2398196-4 DUP		L1834127-1						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		27-SEP-16
EC20 (15min) Original		58.8	57.4		%	2.4	30	27-SEP-16
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		27-SEP-16
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		27-SEP-16
WG2398196-1 MB								
EC50 (15min) Original			PASS					27-SEP-16
EC20 (15min) Original			PASS					27-SEP-16
EC50 (5min) Original			PASS					27-SEP-16
EC20 (5min) Original			PASS					27-SEP-16

Quality Control Report

Workorder: L1834706

Report Date: 28-SEP-16

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Appendix I.3 Analytical Data Verification Memo



Memorandum

February 6, 2017

To: Diana Ball; Jim Yardley; Jennifer Balkwill

Ref. No.: 044985

From:  Stephanie Berton/ev/20

**Subject: Analytical Data Verification
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
March to September 2016**

1. Introduction

The following document details an analytical data verification of results for surface water samples collected at the Clean Harbors Canada Inc. Site in Sarnia, Ontario from March to September 2016. Samples were submitted to ALS Canada Ltd. (ALS) located in Waterloo, Ontario and Calgary, Alberta. A sample collection and analysis summary is presented in Table 1. A summary of the analytical methodology is presented in Table 2.

Standard GHD Limited (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 2 and applicable guidance from the documents entitled:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-94-013, February 1994

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 2. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.



Most samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (<10°C). Sample EQ POND collected August 29, 2016 and submitted for microtox analysis, was not iced during shipment to the laboratory in Calgary, Alberta. The associated microtox results in report L1821188 should be used with caution. The samples summarized in Table 3 were qualified as estimated or rejected due to high temperatures upon arrival at the laboratory.

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) and semi-volatile organic compound (SVOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

The LCS contained all compounds of interest. Most LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy. One LCS recovery did not meet the above guidance. Non-detect results associated with the low LCS recovery were qualified as estimated (see Table 4).



Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". Most LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy. Total kjeldahl nitrogen (TKN) did not meet the above guidance. The detected result associated with the high LCS recovery was qualified as estimated (see Table 4).

6. Matrix Spike (MS) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS samples. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

Organic Analyses

The MS samples were spiked with all compounds of interest. All percent recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

Inorganic Analyses

The MS samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries were within the control limits, demonstrating acceptable analytical accuracy.

7. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory. The laboratory performed additional site-specific duplicate analyses internally. The relative percent differences (RPDs) associated with these duplicate samples must be less than 20 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is a difference of one times the RL value for water samples. All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

8. Conclusion

Based on the assessment detailed in the foregoing, the data are acceptable with the specific qualifications noted herein. Some of the sample results are rejected, causing serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table 2

**Analytical Method and Holding Time Criteria
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
March to September 2016**

Parameters	Methodology ⁽¹⁾	Holding Time Criteria
		Water
Cyanide, total	SM 4500 CN-E	14 days
Hardness	SM 2340B	60 days
Hexavalent Chromium	SW846 7199	28 days
Mercury	EPA 1631	28 days
Metals	SW846 6020/EPA 200.8	60 days
pH	SM 4500H	28 days
Ammonia-N	EPA 350.1	28 days
Un-ionized ammonia-N	Calculation	NA
Anions (Nitrite-N, Nitrate-N)	EPA 300.1	7 days
Anions (Chloride)	EPA 300.1	28 days
Anions (Bromide, Fluoride, Sulphate)	EPA 300.1	30 days
Alkalinity	EPA 310.1	14 days
Conductivity	SM 2510	28 days
Total Dissolved Solids	SM 2540C	7 days
Total Suspended Solids	SM 2540D	7 days
Total Kjeldahl Nitrogen	SM 4500 NORG A	28 days
Chemical Oxygen Demand	SM 5220D	28 days
Dissolved Organic Carbon	SM 5310B	28 days
Phenols	SW846 79066	28 days
Microtox (analyzed in Calgary)	WCMUC(1991)	3 days
Total Phosphorus	SM4500P-F	28 days
Volatile Organic Compounds	SW846 8260	14 days
Semi-volatile Organic Compounds	SW846 8270	14 days

Notes:

- (1) Methods referenced from the following:
 SW846 - "Test Method for Evaluating Solid Waste Physical/Chemical Methods", EPA, November 1986
 with promulgated updates
 SM - Standard Methods for the Examination of Water and Wastewater", 21st Ed., APHA, September 2005
 EPA - "Methods for Chemical Analysis of Water and Wastes", EPA 600/4 79 020, Revised
 WCMUC(1991) - Western Canada Microtox Users Committee

N - Nitrogen

NA - Not applicable

Table 3

**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
March to September 2016**

Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	VOCs	EQ POND	22	10	1,1,1,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,1,1-Trichloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,1,2,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,1,2-Trichloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,1-Dichloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,1-Dichloroethene	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,2-Dibromoethane (Ethylene dibromide)	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,2-Dichloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,2-Dichloropropane	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	2-Butanone (Methyl ethyl ketone) (MEK)	R	µg/L
L1799019	VOCs	EQ POND	22	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	R	µg/L
L1799019	VOCs	EQ POND	22	10	Acetone	R	µg/L
L1799019	VOCs	EQ POND	22	10	Benzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Bromodichloromethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	Bromoform	R	µg/L
L1799019	VOCs	EQ POND	22	10	Bromomethane (Methyl bromide)	R	µg/L
L1799019	VOCs	EQ POND	22	10	Carbon tetrachloride	R	µg/L
L1799019	VOCs	EQ POND	22	10	Chlorobenzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Chloroethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	Chloroform (Trichloromethane)	R	µg/L
L1799019	VOCs	EQ POND	22	10	cis-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	EQ POND	22	10	cis-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Dibromochloromethane	R	µg/L
L1799019	VOCs	EQ POND	22	10	Dichlorodifluoromethane (CFC-12)	R	µg/L
L1799019	VOCs	EQ POND	22	10	Ethylbenzene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Hexane	R	µg/L
L1799019	VOCs	EQ POND	22	10	m&p-Xylenes	R	µg/L

Table 3

**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
March to September 2016**

Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	VOCs	EQ POND	22	10	Methyl tert butyl ether (MTBE)	R	µg/L
L1799019	VOCs	EQ POND	22	10	Methylene chloride	R	µg/L
L1799019	VOCs	EQ POND	22	10	o-Xylene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Styrene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Tetrachloroethene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Toluene	R	µg/L
L1799019	VOCs	EQ POND	22	10	trans-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	EQ POND	22	10	trans-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Trichloroethene	R	µg/L
L1799019	VOCs	EQ POND	22	10	Trichlorofluoromethane (CFC-11)	R	µg/L
L1799019	VOCs	EQ POND	22	10	Vinyl chloride	R	µg/L
L1799019	VOCs	EQ POND	22	10	Trihalomethanes	R	µg/L
L1799019	VOCs	EQ POND	22	10	Xylenes (total)	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1,1,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1,1-Trichloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1,2,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1,2-Trichloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1-Dichloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,1-Dichloroethene	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,2-Dibromoethane (Ethylene dibromide)	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,2-Dichloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,2-Dichloropropane	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	VOCs	EAST POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	VOCs	EAST POND	22	10	2-Butanone (Methyl ethyl ketone) (MEK)	R	µg/L
L1799019	VOCs	EAST POND	22	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	R	µg/L
L1799019	VOCs	EAST POND	22	10	Acetone	R	µg/L
L1799019	VOCs	EAST POND	22	10	Benzene	R	µg/L

Table 3

**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	VOCs	EAST POND	22	10	Bromodichloromethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	Bromoform	R	µg/L
L1799019	VOCs	EAST POND	22	10	Bromomethane (Methyl bromide)	R	µg/L
L1799019	VOCs	EAST POND	22	10	Carbon tetrachloride	R	µg/L
L1799019	VOCs	EAST POND	22	10	Chlorobenzene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Chloroethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	Chloroform (Trichloromethane)	R	µg/L
L1799019	VOCs	EAST POND	22	10	cis-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	EAST POND	22	10	cis-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Dibromochloromethane	R	µg/L
L1799019	VOCs	EAST POND	22	10	Dichlorodifluoromethane (CFC-12)	R	µg/L
L1799019	VOCs	EAST POND	22	10	Ethylbenzene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Hexane	R	µg/L
L1799019	VOCs	EAST POND	22	10	m&p-Xylenes	R	µg/L
L1799019	VOCs	EAST POND	22	10	Methyl tert butyl ether (MTBE)	R	µg/L
L1799019	VOCs	EAST POND	22	10	Methylene chloride	R	µg/L
L1799019	VOCs	EAST POND	22	10	o-Xylene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Styrene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Tetrachloroethene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Toluene	R	µg/L
L1799019	VOCs	EAST POND	22	10	trans-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	EAST POND	22	10	trans-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Trichloroethene	R	µg/L
L1799019	VOCs	EAST POND	22	10	Trichlorofluoromethane (CFC-11)	R	µg/L
L1799019	VOCs	EAST POND	22	10	Vinyl chloride	R	µg/L
L1799019	VOCs	EAST POND	22	10	Trihalomethanes	R	µg/L
L1799019	VOCs	EAST POND	22	10	Xylenes (total)	R	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	VOCs	WEST POND	22	10	1,1,1,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,1,1-Trichloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,1,2,2-Tetrachloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,1,2-Trichloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,1-Dichloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,1-Dichloroethene	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,2-Dibromoethane (Ethylene dibromide)	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,2-Dichloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,2-Dichloropropane	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	2-Butanone (Methyl ethyl ketone) (MEK)	R	µg/L
L1799019	VOCs	WEST POND	22	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	R	µg/L
L1799019	VOCs	WEST POND	22	10	Acetone	R	µg/L
L1799019	VOCs	WEST POND	22	10	Benzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Bromodichloromethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	Bromoform	R	µg/L
L1799019	VOCs	WEST POND	22	10	Bromomethane (Methyl bromide)	R	µg/L
L1799019	VOCs	WEST POND	22	10	Carbon tetrachloride	R	µg/L
L1799019	VOCs	WEST POND	22	10	Chlorobenzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Chloroethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	Chloroform (Trichloromethane)	R	µg/L
L1799019	VOCs	WEST POND	22	10	cis-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	WEST POND	22	10	cis-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Dibromochloromethane	R	µg/L
L1799019	VOCs	WEST POND	22	10	Dichlorodifluoromethane (CFC-12)	R	µg/L
L1799019	VOCs	WEST POND	22	10	Ethylbenzene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Hexane	R	µg/L
L1799019	VOCs	WEST POND	22	10	m&p-Xylenes	R	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	VOCs	WEST POND	22	10	Methyl tert butyl ether (MTBE)	R	µg/L
L1799019	VOCs	WEST POND	22	10	Methylene chloride	R	µg/L
L1799019	VOCs	WEST POND	22	10	o-Xylene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Styrene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Tetrachloroethene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Toluene	R	µg/L
L1799019	VOCs	WEST POND	22	10	trans-1,2-Dichloroethene	R	µg/L
L1799019	VOCs	WEST POND	22	10	trans-1,3-Dichloropropene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Trichloroethene	R	µg/L
L1799019	VOCs	WEST POND	22	10	Trichlorofluoromethane (CFC-11)	R	µg/L
L1799019	VOCs	WEST POND	22	10	Vinyl chloride	R	µg/L
L1799019	VOCs	WEST POND	22	10	Trihalomethanes	R	µg/L
L1799019	VOCs	WEST POND	22	10	Xylenes (total)	R	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1,1,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1,1-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1,2,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1,2-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,1-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,2-Dibromoethane (Ethylene dibromide)	0.20 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,2-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,2-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,2-Dichloropropane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,3-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	1,4-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	2-Butanone (Methyl ethyl ketone) (MEK)	20 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Acetone	20 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Benzene	0.50 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	VOCs	EQ POND	19.6	10	Bromodichloromethane	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Bromoform	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Bromomethane (Methyl bromide)	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Carbon tetrachloride	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Chlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Chloroethane	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Chloroform (Trichloromethane)	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	cis-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	cis-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Dibromochloromethane	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Dichlorodifluoromethane (CFC-12)	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Ethylbenzene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Hexane	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	m&p-Xylenes	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Methyl tert butyl ether (MTBE)	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Methylene chloride	2.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	o-Xylene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Styrene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Tetrachloroethene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Toluene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	trans-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	trans-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Trichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Trichlorofluoromethane (CFC-11)	1.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Vinyl chloride	0.50 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Trihalomethanes	2.0 UJ	µg/L
L1833266	VOCs	EQ POND	19.6	10	Xylenes (total)	1.1 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1,1,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1,1-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1,2,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1,2-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,1-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,2-Dibromoethane (Ethylene dibromide)	0.20 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,2-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,2-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,2-Dichloropropane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,3-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	1,4-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	2-Butanone (Methyl ethyl ketone) (MEK)	20 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Acetone	20 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Benzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Bromodichloromethane	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Bromoform	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Bromomethane (Methyl bromide)	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Carbon tetrachloride	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Chlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Chloroethane	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Chloroform (Trichloromethane)	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	cis-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	cis-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Dibromochloromethane	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Dichlorodifluoromethane (CFC-12)	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Ethylbenzene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Hexane	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	m&p-Xylenes	1.0 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	VOCs	WEST RETENTION POND	19.6	10	Methyl tert butyl ether (MTBE)	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Methylene chloride	2.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	o-Xylene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Styrene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Tetrachloroethene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Toluene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	trans-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	trans-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Trichloroethene	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Trichlorofluoromethane (CFC-11)	1.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Vinyl chloride	0.50 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Trihalomethanes	2.0 UJ	µg/L
L1833266	VOCs	WEST RETENTION POND	19.6	10	Xylenes (total)	1.1 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1,1,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1,1-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1,2,2-Tetrachloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1,2-Trichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,1-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,2-Dibromoethane (Ethylene dibromide)	0.20 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,2-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,2-Dichloroethane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,2-Dichloropropane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,3-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	1,4-Dichlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	2-Butanone (Methyl ethyl ketone) (MEK)	20 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Acetone	20 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Benzene	0.50 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	VOCs	EAST RETENTION POND	19.6	10	Bromodichloromethane	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Bromoform	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Bromomethane (Methyl bromide)	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Carbon tetrachloride	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Chlorobenzene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Chloroethane	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Chloroform (Trichloromethane)	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	cis-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	cis-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Dibromochloromethane	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Dichlorodifluoromethane (CFC-12)	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Ethylbenzene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Hexane	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	m&p-Xylenes	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Methyl tert butyl ether (MTBE)	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Methylene chloride	2.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	o-Xylene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Styrene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Tetrachloroethene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Toluene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	trans-1,2-Dichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	trans-1,3-Dichloropropene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Trichloroethene	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Trichlorofluoromethane (CFC-11)	1.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Vinyl chloride	0.50 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Trihalomethanes	2.0 UJ	µg/L
L1833266	VOCs	EAST RETENTION POND	19.6	10	Xylenes (total)	1.1 UJ	µg/L

Table 3

**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	SVOCs	EQ POND	22	10	1,2,4-Trichlorobenzene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	1-Methylnaphthalene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,3,4,5-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,3,4,6-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,3,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4,5-Trichlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4-Dichlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4-Dimethylphenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4-Dinitrophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,4-Dinitrotoluene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2,6-Dinitrotoluene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2-Chlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	2-Methylnaphthalene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	3,3'-Dichlorobenzidine	R	µg/L
L1799019	SVOCs	EQ POND	22	10	4-Chloroaniline	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Acenaphthene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Acenaphthylene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Anthracene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Benzo(a)anthracene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Benzo(a)pyrene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Benzo(b)fluoranthene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Benzo(g,h,i)perylene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Benzo(k)fluoranthene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	bis(2-Chloroethyl)ether	R	µg/L
L1799019	SVOCs	EQ POND	22	10	bis(2-Ethylhexyl)phthalate (DEHP)	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Chrysene	R	µg/L

Table 3

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Sarnia, Ontario
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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	SVOCs	EQ POND	22	10	Dibenz(a,h)anthracene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Diethyl phthalate	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Dimethyl phthalate	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Fluoranthene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Fluorene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Hexachlorobenzene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Hexachlorobutadiene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Indeno(1,2,3-cd)pyrene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Naphthalene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Pentachlorophenol	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Perylene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Phenanthrene	R	µg/L
L1799019	SVOCs	EQ POND	22	10	Pyrene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	1,2,4-Trichlorobenzene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	1-Methylnaphthalene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,3,4,5-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,3,4,6-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,3,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4,5-Trichlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4-Dichlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4-Dimethylphenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4-Dinitrophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,4-Dinitrotoluene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2,6-Dinitrotoluene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	2-Chlorophenol	R	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	SVOCs	EAST POND	22	10	2-Methylnaphthalene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	3,3'-Dichlorobenzidine	R	µg/L
L1799019	SVOCs	EAST POND	22	10	4-Chloroaniline	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Acenaphthene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Acenaphthylene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Anthracene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Benzo(a)anthracene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Benzo(a)pyrene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Benzo(b)fluoranthene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Benzo(g,h,i)perylene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Benzo(k)fluoranthene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	bis(2-Chloroethyl)ether	R	µg/L
L1799019	SVOCs	EAST POND	22	10	bis(2-Ethylhexyl)phthalate (DEHP)	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Chrysene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Dibenz(a,h)anthracene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Diethyl phthalate	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Dimethyl phthalate	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Fluoranthene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Fluorene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Hexachlorobenzene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Hexachlorobutadiene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Indeno(1,2,3-cd)pyrene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Naphthalene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Pentachlorophenol	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Perylene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Phenanthrene	R	µg/L
L1799019	SVOCs	EAST POND	22	10	Pyrene	R	µg/L

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**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
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Sarnia, Ontario
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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	SVOCs	WEST POND	22	10	1,2,4-Trichlorobenzene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	1,2-Dichlorobenzene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	1,3-Dichlorobenzene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	1,4-Dichlorobenzene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	1-Methylnaphthalene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,3,4,5-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,3,4,6-Tetrachlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,3,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4,5-Trichlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4,6-Trichlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4-Dichlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4-Dimethylphenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4-Dinitrophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,4-Dinitrotoluene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2,6-Dinitrotoluene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2-Chlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	2-Methylnaphthalene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	3,3'-Dichlorobenzidine	R	µg/L
L1799019	SVOCs	WEST POND	22	10	4-Chloroaniline	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Acenaphthene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Acenaphthylene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Anthracene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Benzo(a)anthracene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Benzo(a)pyrene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Benzo(b)fluoranthene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Benzo(g,h,i)perylene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Benzo(k)fluoranthene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	bis(2-Chloroethyl)ether	R	µg/L
L1799019	SVOCs	WEST POND	22	10	bis(2-Ethylhexyl)phthalate (DEHP)	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Chrysene	R	µg/L

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**Qualified Sample Data Due to Insufficient Sample Preservation - Temperature
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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	SVOCs	WEST POND	22	10	Dibenz(a,h)anthracene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Diethyl phthalate	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Dimethyl phthalate	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Fluoranthene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Fluorene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Hexachlorobenzene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Hexachlorobutadiene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Indeno(1,2,3-cd)pyrene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Naphthalene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Pentachlorophenol	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Perylene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Phenanthrene	R	µg/L
L1799019	SVOCs	WEST POND	22	10	Pyrene	R	µg/L
L1833266	SVOCs	EQ POND	19.6	10	1,2,4-Trichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	1,2-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	1,3-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	1,4-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	1-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,3,4,5-Tetrachlorophenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,3,4,6-Tetrachlorophenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,3,6-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4,5-Trichlorophenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4,6-Trichlorophenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4-Dichlorophenol	0.90 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4-Dimethylphenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4-Dinitrophenol	4.0 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,4-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2,6-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	2-Chlorophenol	0.90 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	SVOCs	EQ POND	19.6	10	2-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	3,3'-Dichlorobenzidine	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	4-Chloroaniline	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Acenaphthene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Acenaphthylene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Benzo(a)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Benzo(a)pyrene	0.050 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Benzo(b)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Benzo(g,h,i)perylene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Benzo(k)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	bis(2-Chloroethyl)ether	0.40 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	bis(2-Ethylhexyl)phthalate (DEHP)	2.0 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Chrysene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Dibenz(a,h)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Diethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Dimethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Fluorene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Hexachlorobenzene	0.040 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Hexachlorobutadiene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Indeno(1,2,3-cd)pyrene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Naphthalene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Pentachlorophenol	1.5 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Perylene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Phenanthrene	0.20 UJ	µg/L
L1833266	SVOCs	EQ POND	19.6	10	Pyrene	0.20 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	SVOCs	WEST RETENTION POND	19.6	10	1,2,4-Trichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	1,2-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	1,3-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	1,4-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	1-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,3,4,5-Tetrachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,3,4,6-Tetrachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,3,6-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4,5-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4,6-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4-Dichlorophenol	0.30 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4-Dimethylphenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4-Dinitrophenol	1.0 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,4-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2,6-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2-Chlorophenol	0.30 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	2-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	3,3'-Dichlorobenzidine	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	4-Chloroaniline	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Acenaphthene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Acenaphthylene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Anthracene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Benzo(a)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Benzo(a)pyrene	0.050 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Benzo(b)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Benzo(g,h,i)perylene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Benzo(k)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	bis(2-Chloroethyl)ether	0.40 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	bis(2-Ethylhexyl)phthalate (DEHP)	2.0 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Chrysene	0.20 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Dibenz(a,h)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Diethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Dimethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Fluorene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Hexachlorobenzene	0.040 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Hexachlorobutadiene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Indeno(1,2,3-cd)pyrene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Naphthalene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Pentachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Perylene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Phenanthrene	0.20 UJ	µg/L
L1833266	SVOCs	WEST RETENTION POND	19.6	10	Pyrene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	1,2,4-Trichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	1,2-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	1,3-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	1,4-Dichlorobenzene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	1-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,3,4,5-Tetrachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,3,4,6-Tetrachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,3,6-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4,5-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4,6-Trichlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4-Dichlorophenol	0.30 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4-Dimethylphenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4-Dinitrophenol	1.0 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,4-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2,6-Dinitrotoluene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2-Chlorophenol	0.30 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	SVOCs	EAST RETENTION POND	19.6	10	2-Methylnaphthalene	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	3,3'-Dichlorobenzidine	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	4-Chloroaniline	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Acenaphthene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Acenaphthylene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Benzo(a)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Benzo(a)pyrene	0.050 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Benzo(b)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Benzo(g,h,i)perylene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Benzo(k)fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	bis(2-Chloroethyl)ether	0.40 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	bis(2-Ethylhexyl)phthalate (DEHP)	2.0 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Chrysene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Dibenz(a,h)anthracene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Diethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Dimethyl phthalate	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Fluoranthene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Fluorene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Hexachlorobenzene	0.040 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Hexachlorobutadiene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Indeno(1,2,3-cd)pyrene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Naphthalene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Pentachlorophenol	0.50 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Perylene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Phenanthrene	0.20 UJ	µg/L
L1833266	SVOCs	EAST RETENTION POND	19.6	10	Pyrene	0.20 UJ	µg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	Gen Chem	EQ POND	22	10	Alkalinity, total (as CaCO3)	91 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Alkalinity, total (as CaCO3)	53 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Alkalinity, total (as CaCO3)	93 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Alkalinity, total (as CaCO3)	118 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Alkalinity, total (as CaCO3)	107 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Alkalinity, total (as CaCO3)	104 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Ammonia-N	0.628 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Ammonia-N	1.61 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Ammonia-N	0.538 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Ammonia-N	0.445 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Ammonia-N	1.94 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Ammonia-N	4.06 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Bromide	0.40 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Bromide	1.36 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Bromide	0.76 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Bromide	0.44 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Bromide	0.46 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Bromide	0.47 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Chemical oxygen demand (COD)	20 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Chemical oxygen demand (COD)	26 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Chemical oxygen demand (COD)	25 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Chemical oxygen demand (COD)	15 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Chemical oxygen demand (COD)	22 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Chemical oxygen demand (COD)	36 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Chloride	60.0 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Chloride	42.0 J	mg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	Gen Chem	WEST POND	22	10	Chloride	57.8 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Chloride	32.2 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Chloride	33.0 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Chloride	26.3 J	mg/L
L1799019	Metals	EQ POND	22	10	Chromium VI (hexavalent)	R	mg/L
L1799019	Metals	EAST POND	22	10	Chromium VI (hexavalent)	R	mg/L
L1799019	Metals	WEST POND	22	10	Chromium VI (hexavalent)	R	mg/L
L1833266	Metals	EQ POND	19.6	10	Chromium VI (hexavalent)	0.0010 UJ	mg/L
L1833266	Metals	WEST RETENTION POND	19.6	10	Chromium VI (hexavalent)	0.0010 UJ	mg/L
L1833266	Metals	EAST RETENTION POND	19.6	10	Chromium VI (hexavalent)	0.0010 UJ	mg/L
L1799019	Gen Chem	EQ POND	22	10	Conductivity	675 J	umhos/cm
L1799019	Gen Chem	EAST POND	22	10	Conductivity	665 J	umhos/cm
L1799019	Gen Chem	WEST POND	22	10	Conductivity	659 J	umhos/cm
L1833266	Gen Chem	EQ POND	19.6	10	Conductivity	582 J	umhos/cm
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Conductivity	574 J	umhos/cm
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Conductivity	555 J	umhos/cm
L1799019	Gen Chem	EQ POND	22	10	Cyanide (total)	R	mg/L
L1799019	Gen Chem	EAST POND	22	10	Cyanide (total)	R	mg/L
L1799019	Gen Chem	WEST POND	22	10	Cyanide (total)	R	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Cyanide (total)	0.0020 UJ	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Cyanide (total)	0.0020 UJ	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Cyanide (total)	0.0020 UJ	mg/L
L1799019	Gen Chem	EQ POND	22	10	Dissolved organic carbon (DOC)	4.4 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Dissolved organic carbon (DOC)	5.2 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Dissolved organic carbon (DOC)	6.1 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Dissolved organic carbon (DOC)	4.2 J	mg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Dissolved organic carbon (DOC)	5.1 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Dissolved organic carbon (DOC)	5.2 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Fluoride	0.531 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Fluoride	1.10 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Fluoride	0.658 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Fluoride	0.790 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Fluoride	0.816 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Fluoride	0.838 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Hardness	246 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Hardness	250 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Hardness	230 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Hardness	221 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Hardness	233 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Hardness	236 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Nitrate (as N)	R	mg/L
L1799019	Gen Chem	EAST POND	22	10	Nitrate (as N)	R	mg/L
L1799019	Gen Chem	WEST POND	22	10	Nitrate (as N)	R	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Nitrate (as N)	0.021 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Nitrate (as N)	0.020 UJ	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Nitrate (as N)	0.020 UJ	mg/L
L1799019	Gen Chem	EQ POND	22	10	Nitrite (as N)	R	mg/L
L1799019	Gen Chem	EAST POND	22	10	Nitrite (as N)	R	mg/L
L1799019	Gen Chem	WEST POND	22	10	Nitrite (as N)	R	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Nitrite (as N)	0.012 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Nitrite (as N)	0.010 UJ	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Nitrite (as N)	0.010 UJ	mg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	Gen Chem	EQ POND	22	10	pH, lab	8.43 J	s.u.
L1799019	Gen Chem	EAST POND	22	10	pH, lab	8.23 J	s.u.
L1799019	Gen Chem	WEST POND	22	10	pH, lab	8.44 J	s.u.
L1833266	Gen Chem	EQ POND	19.6	10	pH, lab	7.99 J	s.u.
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	pH, lab	8.18 J	s.u.
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	pH, lab	8.16 J	s.u.
L1799019	Gen Chem	EQ POND	22	10	Phenolics (total)	0.0037 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Phenolics (total)	0.0031 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Phenolics (total)	0.0042 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Phenolics (total)	0.0039 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Phenolics (total)	0.0044 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Phenolics (total)	0.0028 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Phosphorus	0.0118 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Phosphorus	0.0244 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Phosphorus	0.0191 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Phosphorus	0.0183 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Phosphorus	0.0217 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Phosphorus	0.0604 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Sulfate	157 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Sulfate	180 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Sulfate	153 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Sulfate	125 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Sulfate	126 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Sulfate	135 J	mg/L

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Lab Report #	Parameter	Sample ID	Temp. Upon Receipt at Laboratory (°C)	Required Temperature (°C)	Analyte	Qualified Result	Units
L1799019	Gen Chem	EQ POND	22	10	Total dissolved solids (TDS)	412 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Total dissolved solids (TDS)	388 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Total dissolved solids (TDS)	395 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Total dissolved solids (TDS)	377 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Total dissolved solids (TDS)	374 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Total dissolved solids (TDS)	373 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Total kjeldahl nitrogen (TKN)	0.99 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Total kjeldahl nitrogen (TKN)	2.12 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Total kjeldahl nitrogen (TKN)	1.6 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Total kjeldahl nitrogen (TKN)	0.86 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Total kjeldahl nitrogen (TKN)	3.13 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Total kjeldahl nitrogen (TKN)	4.75 J	mg/L
L1799019	Gen Chem	EQ POND	22	10	Total suspended solids (TSS)	2.8 J	mg/L
L1799019	Gen Chem	EAST POND	22	10	Total suspended solids (TSS)	9.5 J	mg/L
L1799019	Gen Chem	WEST POND	22	10	Total suspended solids (TSS)	19.0 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Total suspended solids (TSS)	2.0 UJ	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Total suspended solids (TSS)	2.0 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Total suspended solids (TSS)	24.4 J	mg/L
L1833266	Gen Chem	EQ POND	19.6	10	Un-ionized ammonia	0.0124 J	mg/L
L1833266	Gen Chem	WEST RETENTION POND	19.6	10	Un-ionized ammonia	0.131 J	mg/L
L1833266	Gen Chem	EAST RETENTION POND	19.6	10	Un-ionized ammonia	0.151 J	mg/L

Notes:

- J - Estimated concentration
- UJ - Not detected; associated reporting limit is estimated
- R - Rejected
- VOCs - Volatile Organic Compounds
- SVOCs - Semi-volatile Organic Compounds
- Gen Chem - General Chemistry

Table 4

**Qualified Sample Results Due to Outlying Laboratory Control Sample Results
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
March to September 2016**

Lab Report #	Parameter	Analyte	LCS % Recovery	Control Limits % Recovery	Associated Sample ID	Qualified Results	Units
L1750708	Gen Chem	EQ POND	122	80-120	Total kjeldahl nitrogen (TKN)	0.75 J	mg/L
L1763136	SVOCs	SW-44985-050316-MS-003	45	50-140	2,4-Dimethylphenol	0.50 UJ	µg/L
L1763136	SVOCs	SW-44985-050316-MS-004	45	50-140	2,4-Dimethylphenol	0.50 UJ	µg/L
L1763136	SVOCs	SW-44985-050316-MS-005	45	50-140	2,4-Dimethylphenol	0.50 UJ	µg/L

Notes:

- LCS - Laboratory Control Sample
- UJ - Not detected; associated reporting limit is estimated
- J - Estimated concentration
- SVOCs - Semi-Volatile Organic Compounds

Appendix I.4 CEP Declaration, Monitoring, and Screening Checklist

Appendix D-Monitoring and Screening Checklist General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.

Instructions: A complete checklist consists of:

- (a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
- (b) completed contact information for the Competent Environmental Practitioner (CEP)
- (c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

Definition of Surface water CEP:

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information

Waste Disposal Site Name	Clean Harbors Canada, Inc. - Lambton Facility
Location (e.g. street address, lot, concession)	4090 Telfer Road, R.R. #1, Corunna, Ontario, N0N 1G0
GPS Location (taken within the property boundary at front gate/ front entry)	NAD 83; Zone 17; Easting (m) 393726; Northing (m) 4748167; Horizontal Accuracy +/-3m
Municipality	St. Clair Township, Lambton County
Client and/or Site Owner	Clean Harbors Canada, Inc.
Monitoring Period (Year)	January 1 through December 31, 2016
This Monitoring Report is being submitted under the following:	
Certificate of Approval No.:	ECA A031806
Director's Order No.:	Not applicable
Provincial Officer's Order No.:	Not applicable
Other:	Not applicable

Report Submission Frequency	<input checked="" type="radio"/> Annual <input type="radio"/> Other	
The site is:	<input checked="" type="radio"/> Active <input type="radio"/> Inactive <input type="radio"/> Closed	
If closed, specify C of A, control or authorizing document closure date:		Select Date
Has the nature of the operations at the site changed during this monitoring period?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
If yes, provide details:	Type Here	
Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i. e. exceeded the LEL for methane)	<input type="radio"/> Yes <input checked="" type="radio"/> No	

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

<p>1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p>Not applicable</p>
<p>2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document(s):</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Not Applicable</p>	<p>If no, list exceptions below or attach information.</p>

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
Npt appliable		01/04/2017
		Select Date
		2
Type Here	Type Here	Select Date

3) a) Some or all groundwater, leachate and WDS gas sampling and monitoring requirements have been established or defined outside of a ministry C of A, authorizing, or control document.	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable	
b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable	If no, list exceptions below or attach additional information.
Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
Type Here	Type Here	Concentration of 16.2 mg/L <input type="checkbox"/>
15.0 mg/L	Total Suspended Solids	Concentration of 16.2 mg/L <input type="checkbox"/>
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	<input type="radio"/> Yes <input type="radio"/> No	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

<p>5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>If no, the potential design and operational concerns/ exceptions are as follows (Type Here):</p>	
<p>6) The site meets compliance and assessment criteria.</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>If no, list and explain exceptions (Type Here):</p>	
<p>7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>If no, list exceptions and explain reason for increase/change (Type Here):</p>	
<p>1) Is one or more of the following risk reduction practices in place at the site:</p> <p>(a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/treatment; or</p> <p>(b) There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or</p> <p>(c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):</p> <p><i>i.</i> The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and</p> <p><i>ii.</i> Seasonal and annual water levels and water quality fluctuations are well understood.</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>Note which practice(s):</p>	<p><input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)</p>
<p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable</p>	<p>If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here):</p>	

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Select Date

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

No changes to the monitoring program are recommended



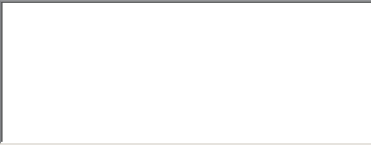
Type Here

The following change(s) to the monitoring program is/are recommended:

No Changes to site design and operation are recommended

Type Here

The following change(s) to the site design and operation is/are recommended:

Name:	Type Here		
Seal:	Add Image		
Signature:		Date:	Select Date
CEP Contact Information:	Type Here		
Company:	Type Here		
Address:	Type Here		
Telephone No.:	Type Here	Fax No. :	Type Here
E-mail Address:	Type Here		
Co-signers for additional expertise provided:			
Signature:		Date:	Select Date
Signature:		Date:	Select Date

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s)	The receiving drains along Telfer Road and the drainage ditches downstream to Bear Creek
Distance(s)	Approximately +/-10 km

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	<input checked="" type="radio"/> Yes <input type="radio"/> No	If no, identify issues (Type Here):
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable (No C of A, authorizing / control document applies)	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

<p>3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> Not Applicable</p>		
<p>b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> Not Applicable</p>	<p>If no, specify below or provide details in an attachment.</p>	
Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)		Date
Type Here	Type Here		Select Date
Type Here	Type Here		Select Date
Type Here	Type Here		Select Date
Type Here	Type Here		Select Date
<p>4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/ outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>If no, specify (Type Here):</p>	

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):

- Yes
 No

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
Total Suspended Solids	15.0 mg/L	Concentration of 16.2 mg/L observed on April 2, 2016. 8 percent above ECA Effluent Limit
Type Here	Type Here	
Type Here	Type Here	Type Here
Type Here	Type Here	Type Here

6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?

- Yes
 No

<p>7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>If no, list parameters and stations that is outside the expected range. Identify whether parameter concentrations show an increasing trend or are within a high historical range (Type Here)</p>
<p>8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g., PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Known</p> <p><input checked="" type="radio"/> Not Applicable</p>	<p>1</p>
<p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>	<p>If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here)</p>

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

03/03/2017

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

<p><input checked="" type="radio"/> No Changes to the monitoring program are recommended</p> <p><input type="radio"/> The following change(s) to the monitoring program is/are recommended:</p>	1
<p><input checked="" type="radio"/> No changes to the site design and operation are recommended</p> <p><input type="radio"/> The following change(s) to the site design and operation is/are recommended:</p>	Type Here

CEP Signature		
Relevant Discipline	Professional Engineer	
Date:	March 16, 2017	
CEP Contact Information:	Mr. Jim Yardley, P.Eng.	
Company:	GHD	
Address:	651 Colby Drive, Waterloo, Ontario, N2V 1C2	
Telephone No.:	519-884-0510	
Fax No. :		
E-mail Address:	jim.yardley@ghd.com	
Save As		Print Form

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