APPENDIX H

Surface Water Quality Monitoring Report

Clean Harbors Canada, Inc.

2017 Annual Landfill Report

2017 Annual Surface Water Quality Monitoring Report

Clean Harbors Lambton Facility

Clean Harbors Canada, Inc.

GHD | 651 Colby Drive Waterloo Ontario N2V 1C2 Canada

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1. Introduction

1.1 Purpose and Organization

GHD on behalf of Clean Harbors Canada, Inc. (Clean Harbors) has prepared the "2017 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 the 2017 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 A. 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/akali 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.erica@cleanharbors.com

GHD was retained by Clean Harbors to conduct the 2017 annual monitoring program. The Competent Environmental Practitioner (CEP) who reviewed the 2017 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 in Cell 19-1. 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. During the 2017 reporting period:

a) Sub-cell 19-1-3A & B were constructed

b) Disposal occurred in sub-cells 19-1-2A, B, and C

c) Interim cover was applied to sub-cell 19-1-1 (north) and sub-cells 19-1-2A and B.

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 that relate to the surface water management system at the Site 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 and process water. Leachate, i.e., surface water generated from the active waste disposal area, is discussed in the Landfill Annual Monitoring Report.

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 m^3 of 20 mm clear crushed stone and 14.2 m^3 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 in 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 from the West Pond is transferred to the process water ponds for use as quench water. This normally occurs during the dryer periods of the year (August through October).

1.5.3 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:

- The sand filters were backwashed on the following dates in 2017:
  - January 24 and 27
  - February 1, 7 and 17
  - March 3 and 10
  - April 17, 21, and 26
  - May 1, 5, 9, 15, 19, 23, 26, and 29
  - June 2, 5, 7, 8, 9, 12, 14, and 16
- Maintenance in 2017 consisted of the following:
  - West 4-inch pump was repaired on February 14, 2017
  - Motor was replaced on the 6-inch pump March 10, 2017
  - Pumps were inspected on June 2, 2017
  - Suction line was changed out and adjusted on the 6-inch pump at the pump house on June 16, 2017

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 2017 Annual Groundwater Monitoring Report, prepared by GHD.

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 systems have 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 is documented in 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 A.

Surface water is stored within the ponds at the Site 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 cell (Cell 19) is in close proximity to the West Pond, which is the main surface water storage pond prior to water treatment, and this cell 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: January 24 to March 20, 2017
- Period 2: April 11 to June 15, 2017
- Period 3: December 19 to 22, 2017

During Period 3, discharge occurred for a total of only 4 days. Weather and ice-related conditions made it unsafe for a sampling technician to access all of the required sampling points thus no analytical data is available for chloride and sulphate. Data for all parameters regularly analyzed is available for Periods 1 and 2.

Effluent discharge presented in Table 5 during the noted periods were below the maximum discharge rate for the SWTP of 4.5 million litres per day (L/d) specified in the ECA.

As indicated in Table 5, during Period 2 an exceedance in TSS above the limit of 15.0 mg/L was measured on May 6, 2017 (19.8 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 May 8, 2017. The sand filters were backwashed on May 5, 2017, which may explain the elevated levels of TSS on May 6, 2017.

There were no further exceedances noted for discharge Periods 1 to 3.

There were no issues noted with respect to operation of the flow meter.

4.2 Monthly Discharge Monitoring

The results of the monthly discharge monitoring are presented in Tables 6 to 10 with analytical reports provided in Appendix B. An analytical data verification memo summarizing GHD's assessment of sample supporting quality assurance/quality control (QA/QC) procedures is included

in Appendix C. 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 January 25, February 21, March 20, May 8, June 5, and December 20, 2017 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 January 25 (0.0015), February 21 (0.0044), March 20 (0.0017), May 8 (0.0026), and June 5 (0.0025)
- Phosphorus above the objective of 0.01 mg/L on January 25 (0.0165), February 21 (0.0241), March 20 (0.0155), May 8 (0.0188), June 5 (0.0112), and December 20 (0.0197)
- Unionized ammonia above the objective of 0.02 mg/L on January 25 (0.0234)
- Aluminum above the objective of 0.075 mg/L on January 25 (0.193), February 21 (0.283), March 20 (0.250), May 8 (0.432), and December 20 (0.147)
- Boron above the objective of 0.2 mg/L on December 20 (0.245)
- Iron above the objective of 0.3 mg/L on May 8 (0.362)
- Molybdenum above the objective of 0.04 mg/L on January 25 (0.0522), June 5 (0.0535), and December 20 (0.0429)

The qualifier of 'J' following a result in Table 6 indicates an estimated value. The rationale for the qualification of a result is provided in the associated QA/QC memorandum provided in Appendix C.

It was noted that a number of sVOC parameters had reporting limits that were above their associated PWQO, with bis(2-Ethylhexyl)phthalate (DEHP) the highest with a reporting limit of 2.0 µg/L and PWQO of 0.6 µg/L.

The off-site up-stream sample location, STN6, provides 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 results provided in Table 10 indicates that of the 7 parameters for the EQ Pond results noted to have an exceedance of the PWQOs, the background location also has exceedances for total phenolics that are similar and in the case of phosphorus, aluminum, and iron, are higher than the EQ Pond. Molybdenum is slightly elevated over the PWQO for two of the five results. The unionized ammonia results are reported to be above the PWQO during the January 2017 sampling event, but was below the PWQO for the remainder of the year. Boron was reported to be above the PWQO during a single monitoring event, in December 2017.

4.2.2 Toxicity Monitoring

Toxicity monitoring samples from the Equalization Pond were taken on January 25, February 21, March 20, May 8, and June 5, 2017. A toxicity monitoring sample was not be taken from the Equalization Pond during the short discharge Period 3 in December 2017 as there was no sampling date that would have kept the samples within their specified holding time due to shipping logistics as the sample is analyzed in Calgary, AB.

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 8, September 13, and November 7, 2017 including of the surface water management system. The presence of live fish in the Equalization Pond was confirmed during the first three quarterly inspections. No fish were observed in the equalization pond during the fourth quarterly inspection. It was noted that the water level was lower than usual, though murky. Also, it is likely that the fish were near the bottom of the pond given the colder temperatures.

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 January 25, February 21, March 20, May 8, and June 5, 2017. 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:

- Hexavalent chromium VI above the objective of 0.001 mg/L on May 8 (0.0015)
- Total cyanide above the objective of 0.005 mg/L on January 25 (0.0085)
- Total phenolics above the objective of 0.001 mg/L on January 25 (0.0032), February 21 (0.0043), May 8 (0.0024), and June 5 (0.0031)
- Phosphorus above the objective of 0.01 mg/L on January 25 (0.0437), February 21 (0.0224), March 20 (0.0420), May 8 (0.0372), June 5 (0.0196), and December 20 (0.0478)
- Aluminum above the objective of 0.075 mg/L on January 25 (1.08), February 21 (0.607), March 20 (0.689), May 8 (1.16), June 5 (0.254), and December 20 (0.351)
- Iron above the objective of 0.3 mg/L on January 25 (0.866), February 21 (0.506), March 20 (0.572), May 8 (1.17), and December 20 (0.325)
- Molybdenum above the objective of 0.04 mg/L on March 20 (0.0405), May 8 (0.0663), June 5 (0.0654), and December 20 (0.0422)

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 January 25 (0.0027), February 21 (0.0040), March 20 (0.0012), May 8 (0.0036), and June 5 (0.0039)
- Phosphorus above the objective of 0.01 mg/L on January 25 (0.0157), February 21 (0.0153), March 20 (0.0190), May 8 (0.0320), June 5 (0.0234), and December 20 (0.0233)
- Unionized ammonia above the objective of 0.02 mg/L on February 21 (0.0255)
- Aluminum above the objective of 0.075 mg/L on March 20 (0.278), May 8 (0.528), June 5 (0.226), and December 20 (0.162)
- Iron above the objective of 0.3 mg/L on January 25 (0.456)
- Molybdenum above the objective of 0.04 mg/L on June 5 (0.0481)

The qualifier of 'J' following a result in Table 8 or 9 indicates an estimated value. The rationale for the qualification of a result is provided in the associated QA/QC memorandum provided in Appendix C.

It was noted that a number of sVOC parameters had reporting limits that were above their associated PWQO, with bis(2-Ethylhexyl)phthalate (DEHP) the highest with a reporting limit of 2.0 µg/L and PWQO of 0.6 µg/L.

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 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 at this time.
- The East Pond had single reported results for hexavalent chromium VI and total cyanide above the PWQOs during the reporting period.
- Individual concentrations of 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.
- 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 8, 2017. 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 8 (0.0021)
- Phosphorus above the objective of 0.01 mg/L on May 8 (0.365)
- Aluminum above the objective of 0.075 mg/L on May 8 (2.34)
- Iron above the objective of 0.3 mg/L on May 8 (2.20)

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 8 (0.001)
- Phosphorus above the objective of 0.01 mg/L on May 8 (0.279)
- Aluminum above the objective of 0.075 mg/L on May 8 (2.01)
- Iron above the objective of 0.3 mg/L on May 8 (1.92)

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 at this time.

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 for a single day where there was an exceedance of TSS (May 6, 2017). 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 2017 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.

6. References

GHD. 2016 Annual Surface Water Report, Clean Harbors Lambton Facility. March 2017.

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 M. Ball, P. Eng.

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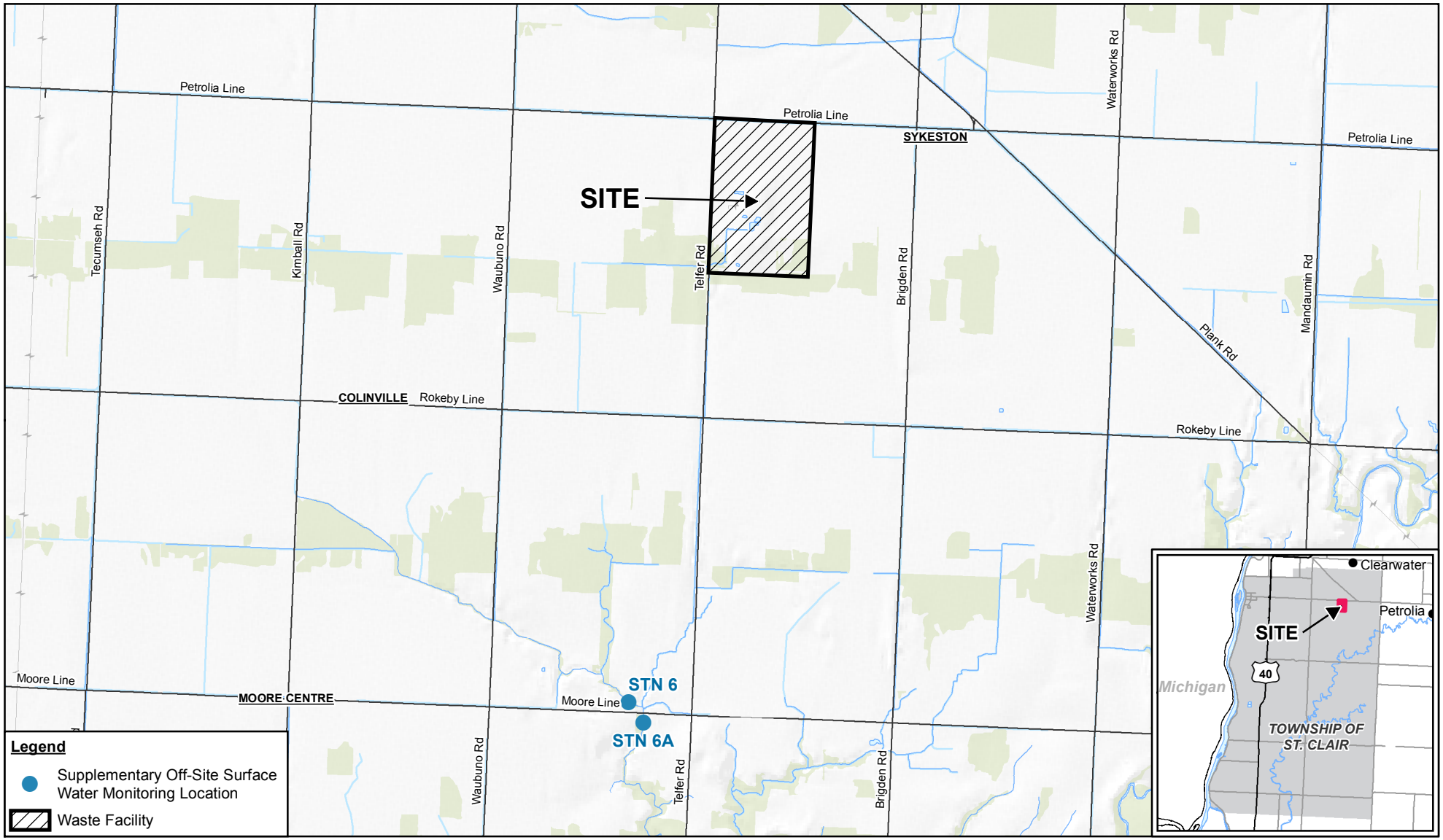


Source: MNRF NRVIS, 2017. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2017.

0 500 1,000 1,500
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

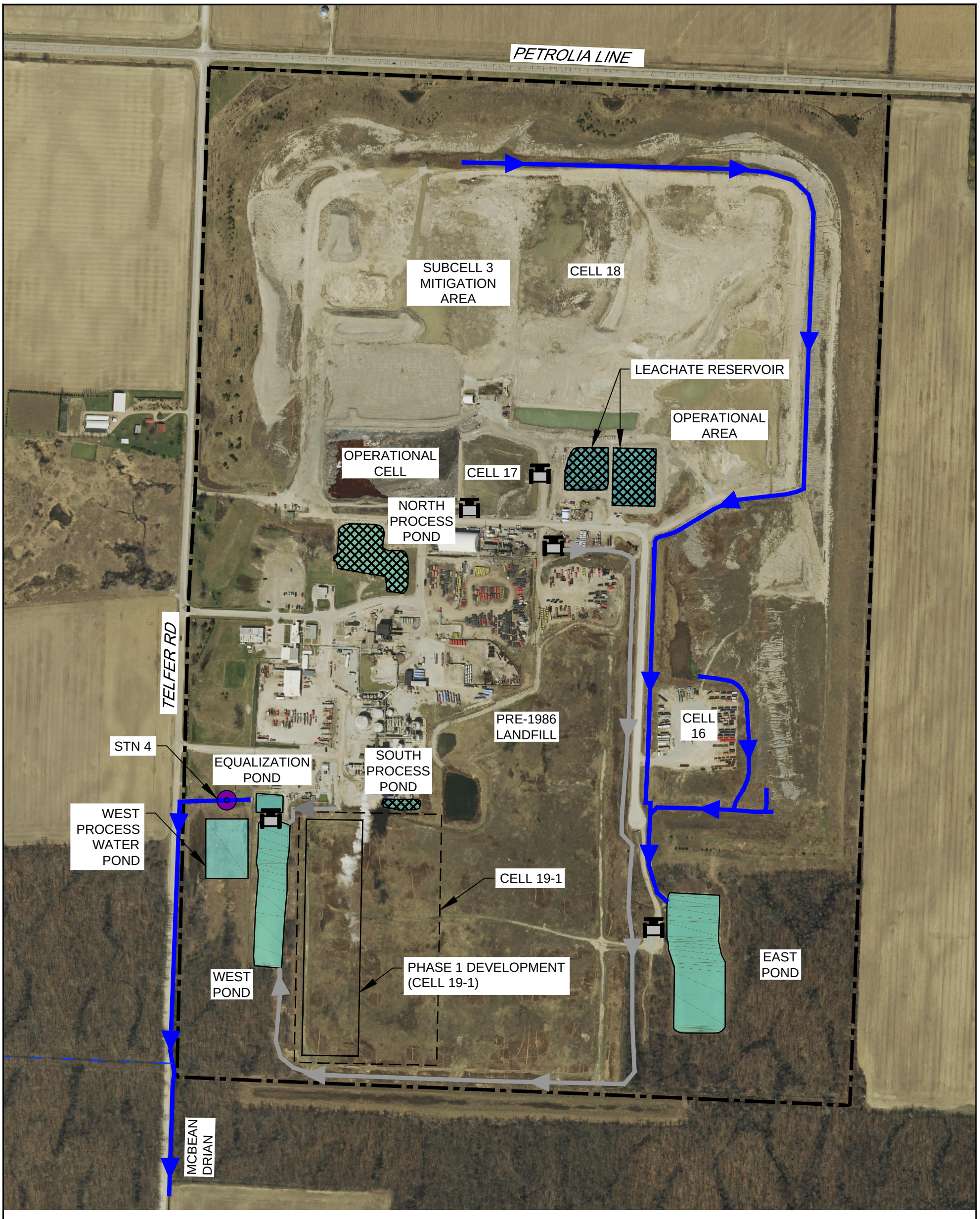
CLEAN HARBORS CANADA INC.
LAMBTON COUNTY, ONTARIO

44985-20
Nov 3, 2017

SUPPLEMENTARY OFF-SITE MONITORING LOCATIONS AND SITE LOCATION MAP

FIGURE 1

GIS File: Q:\GIS\PROJECTS\44000s\44985\Layouts\032\44985-20(032)GIS-WA001.mxd



Source: SWOOP 2015.

0 50 100 150m

CLEAN HARBORS
LAMBTON, ONTARIO
2017 ANNUAL SURFACE WATER QUALITY MONITORING REPORT

44985-98

Nov 1, 2017

SURFACE WATER MANAGEMENT SYSTEM

FIGURE 2

CAD File: P:\drawings\44000s\44985\44985-REPORTS\44985-98(032)\44985-98(032)GN-WA001.dwg

Table 2

Surface Water Monitoring Program
2017 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.

		Proposed Surface Water Sampling Program		
Monitoring Location	**Parameter [1]**	**Daily Discharge**	**Monthly Discharge**	**Spring and late Summer/Fall**
Equalization Reservoir Discharge	pH, Conductivity, TSS, Total Phenols, Chloride, Solvent Extractables	■		
	Microtox		■ [2]	
	General Chemistry		■ [2]	
	Metals		■ [2]	
	VOCs		■ [2]	
	sVOCs		■ [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			■ [3]
	Metals			■ [3]
STN6A (off-site downstream)	General Chemistry			■ [3]
	Metals			■ [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
2017 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.

Parameter	Analytes
General Chemistry Parameters	Alkalinity (total as CaCO3), 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-Dichlorethene, 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)flouranthene/Benzo(j)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2-Chloroethy)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
2017 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.

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 Extractables (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Flow Rate (LPM)	Daily Flow (L)
1/23/17	6.59	0.120	<1	<0.005	<5	8.5	18	Recirc	
1/24/17	7.30	0.540	4.1	<0.0015	<5	35.5	129	300	432,000
1/25/17	7.36	0.680	6.2	0.0015	<5	45.7	153	770	1,108,800
1/26/17	7.28	0.720	5.1	0.0034	<5	53.8	175	676	973,440
1/27/17	7.63	0.792	5.5	0.002	<5	53	167	600	864,000
1/28/17	7.48	0.819	1.4	<0.005	<5	56	176	849	1,222,560
1/29/17	7.53	0.827	2.3	0.0056	<5	59	186	714	1,028,160
1/30/17	7.61	0.800	5	0.0047	<5	59	188	608	875,520
1/31/17	7.70	0.820	5.8	0.0039	<5	59.9	189	600	864,000
2/1/17	7.46	0.830	3.5	0.0038	<5	61.1	196	550	792,000
2/2/17	7.31	0.847	5.3	0.0017	<5	59	192	801	1,153,440
2/3/17	7.88	0.814	1.2	0.003	<5	60	196	788	1,134,720
2/4/17	7.26	0.777	<1	0.0027	<5	62	198	783	1,127,520
2/5/17	7.25	0.770	1.9	0.0031	<5	63.4	197	656	944,640
2/6/17	7.30	0.850	0.9	0.0025	<5	63.6	195	586	843,840
2/7/17	7.41	0.840	2	0.0021	<5	59.7	192	570	820,800
2/8/17	7.75	0.863	<1	0.0032	<5	61	186	911	1,311,840
2/9/17	7.74	0.876	1.1	0.0031	<5	61	194	825	1,188,000
2/10/17	7.71	0.872	4.9	0.0024	<5	61	194	750	1,080,000
2/11/17	7.49	0.800	1.7	0.0025	<5	60.3	195	817	1,176,480
2/12/17	7.75	0.750	0.6	0.0022	<5	59.7	194	758	1,091,520
2/13/17	7.50	0.660	4.2	0.002	<5	61.4	202	550	792,000
2/14/17	7.70	0.799	1.5	<0.0015	<5	60	192	686	987,840
2/15/17	7.22	0.801	3.3	<0.0015	<5	60	224	552	794,880
2/16/17	7.40	0.790	<1	<0.0015	<5	59	188	530	763,200
2/17/17	7.82	0.733	<1	<0.0015	<5	59	181	575	828,000
2/18/17	7.80	0.696	<1	<0.0015	<5	59	175	936	1,347,840
2/19/17	7.39	0.770	2.2	<0.0015	<5	60.5	182	965	1,389,600
2/20/17	7.33	0.792	4.3	<0.0015	<5	57	167	797	1,147,680
2/21/17	7.98	0.792	4.6	<0.0015	<5	57	167	814	1,172,160
2/22/17	7.78	0.799	3.6	<0.0015	<5	56	166	688	990,720
2/23/17	7.86	0.640	4.6	<0.0015	<5	55.8	166	800	1,152,000
2/24/17	7.40	0.650	8.9	<0.0015	<5	56.1	167	1107	1,594,080
2/25/17	7.73	0.670	7.6	0.0017	<5	54.9	166	1000	1,440,000
2/26/17	8.12	0.744	3.5	<0.0015	<5	54	163	670	964,800
2/27/17	7.52	0.675	4	<0.0015	<5	50	158	613	882,720
2/28/17	7.65	0.644	8	<0.0015	<5	50	156	552	794,880
3/1/17	7.71	0.700	3	<0.0015	<5	50.6	157	497	715,680
3/2/17	7.22	0.710	2.2	<0.0015	<5	51.4	156	407	586,080
3/3/17	7.12	0.670	5.7	<0.0015	<5	50.8	156	325	468,000
3/4/17	7.82	0.705	4.3	<0.0015	<5	50	148	938	1,350,720
3/5/17	7.78	0.710	4.3	<0.0015	<5	51	148	778	1,120,320
3/6/17	7.77	0.710	3.3	<0.0015	<5	50	145	706	1,016,640
3/7/17	7.83	0.699	1.07	<0.0015	<5	51.83	146	715	1,029,600
3/8/17	7.63	0.676	1.65	0.0016	<5	50.73	144	471.5	678,960
3/9/17	7.54	0.703	6.54	<0.0015	<5	49.94	142	912.9	1,314,576
3/10/17	7.77	0.696	5.2	<0.0015	<5	50.7	144	0	0
3/11/17	7.87	0.699	2.8	<0.0015	<5	52	147	754	1,085,760
3/12/17	7.68	0.658	4.8	0.002	<5	52	147	619	891,360
3/13/17	7.53	0.673	2.97	0.00345	<5	50.31	141	546.9	787,536
3/14/17	7.81	0.672	2.31	0.0017	<5	48.96	144	501.9	722,736
3/15/17	7.62	0.683	2.3	0.00186	<5	52.21	150	1026.5	1,478,160
3/16/17	7.37	0.669	5.5	0.0028	<5	49	144	897	1,291,680
3/17/17	7.58	0.706	6.1	0.0024	<5	50	147	944	1,359,360
3/18/17	7.80	0.703	9.5	0.0028	<5	48	148	848	1,221,120

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 Extractables (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Flow Rate (LPM)	Daily Flow (L)
3/19/17	7.54	0.660	2.7	0.0024	<5	46	150	814	1,172,160
3/20/17	7.49	0.684	1.01	0.0022	<5	44.68	148	774.7	1,115,568
4/10/17	8.23	0.690	5.9	0.0023	<5	42	139	0	0
4/11/17	7.89	0.684	9.1	0.002	<5	45	148	1075	1,548,000
4/12/17	7.82	0.574	6.9	0.0023	<5	44	144	985	1,418,400
4/13/17	7.78	0.618	12.7	0.0021	<5	45	146	850	1,224,000
4/14/17	7.77	0.640	9.8	0.0024	<5	46.4	150	775	1,116,000
4/15/17	7.82	0.682	5	0.0028	<5	47	148	741	1,067,040
4/16/17	7.91	0.703	2.8	<0.0015	<5	47	149	641	923,040
4/17/17	7.40	0.658	1	0.0019	<5	46	149	540	777,600
4/18/17	7.73	0.690	4.5	0.0023	<5	48	151	960	1,382,400
4/19/17	7.66	0.700	6.3	0.0023	<5	48.2	151	690	993,600
4/20/17	7.87	0.680	3.4	0.002	<5	46.7	151	787	1,133,280
4/21/17	7.99	0.694	3.4	0.0029	<5	47	146	680	979,200
4/22/17	7.80	0.709	4	0.0026	<5	49	144	965	1,389,600
4/23/17	7.54	0.733	7.9	0.0027	<5	52	149	797	1,147,680
4/24/17	7.89	0.660	4	0.0023	<5	51.9	146	770	1,108,800
4/25/17	7.84	0.590	3	0.0017	<5	52.8	146	730	1,051,200
4/26/17	7.83	0.630	4.6	0.0027	<5	55.4	155	603	868,320
4/27/17	8.09	0.763	3	<0.0015	<5	55	153	892	1,284,480
4/28/17	8.23	0.735	1	0.002	<5	54	153	764	1,100,160
4/29/17	7.69	0.713	11	0.0024	<5	54.5	156	650	936,000
4/30/17	7.87	0.670	5.4	0.0026	<5	55.2	157	550	792,000
5/1/17	7.95	0.720	2.5	0.0015	<5	55.7	160	446	642,240
5/2/17	7.92	0.720	4.9	0.002	<5	54.5	160	820	1,180,800
5/3/17	7.88	0.769	5.8	0.0024	<5	54	168	766	1,103,040
5/4/17	8.19	0.767	2.8	0.0039	<5	53	159	558	803,520
5/5/17	7.70	0.749	4.3	0.0026	<5	54	166	434	624,960
5/6/17	7.60	0.700	19.8	0.0025	<5	52.8	162	770	1,108,800
5/7/17	7.83	0.700	9.1	0.0027	<5	52.3	145		0
5/8/17	7.87	0.730	8.8	0.0019	<5	51.7	157	560	806,400
5/9/17	7.57	0.751	2	0.0022	<5	53	161	650	936,000
5/10/17	7.93	0.742	10.4	<0.0015	<5	52	162	850	1,224,000
5/11/17	7.84	0.740	3.7	0.0024	<5	54	167	875	1,260,000
5/12/17	7.80	0.750	3.8	0.002	<5	53.6	165	787	1,133,280
5/13/17	7.93	0.700	3.6	0.0019	<5	53.1	164	645	928,800
5/14/17	7.71	0.780	3.9	<0.0015	<5	54.2	170	460	662,400
5/15/17	7.75	0.766	1	0.0031	<5	51	159	961	1,383,840
5/16/17	7.85	0.765	4.8	0.0019	<5	49	151	980	1,411,200
5/17/17	7.54	0.769	1	0.0015	<5	51	162	699	1,006,560
5/18/17	7.69	0.710	5.1	0.0019	<5	44	138	490	705,600
5/19/17	7.74	0.740	1.3	<0.0015	<5	51.8	164	320	460,800
5/20/17	7.53	0.700	2.7	0.0021	<5	51.7	170	497	715,680
5/21/17	7.49	0.750	1.8	<0.0015	<5	51	165	310	446,400
5/22/17	7.76	0.744	<1	0.0024	<5	50	171	300	432,000
5/23/17	7.38	0.727	2.5	0.0023	<5	50	160	925	1,332,000
5/24/17	8.29	0.760	3.1	0.0028	<5	48.6	159	475	684,000
5/25/17	7.76	0.730	2.4	0.0016	<5	49.1	160	460	662,400
5/26/17	7.73	0.740	2.4	<0.0015	<5	48.9	156	450	648,000
5/27/17	7.85	0.736	1.7	<0.0015	<5	48	158	597	859,680
5/28/17	7.94	0.750	3.6	<0.0015	<5	47	159	377	542,880
5/29/17	7.81	0.748	2.1	<0.0015	<5	48	157	212	305,280
5/30/17	7.79	0.747	2.7	<0.0015	<5	48	159	550	792,000
5/31/17	7.95	0.740	3.2	0.0026	<5	49.1	164	441	635,040
6/1/17	7.68	0.740	2	<0.0015	<5	48.9	163	161	231,840

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 Extractables (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Flow Rate (LPM)	Daily Flow (L)
6/2/17	7.86	0.730	1.3	<0.0015	<5	48.2	161	240	345,600
6/3/17	7.62	0.730	2.8	<0.0015	<5	49.2	162	610	878,400
6/4/17	7.58	0.742	7.1	<0.0015	<5	49	157	314	452,160
6/5/17	7.65	0.730	1.4	<0.0015	<5	50.8	163	150	216,000
6/6/17	7.55	0.720	2.2	<0.0015	<5	51.6	162	460	662,400
6/7/17	7.76	0.700	1.5	0.0015	<5	50.5	163	265	381,600
6/8/17	7.66	0.737	3.5	<0.0015	<5	50	158	475	684,000
6/9/17	7.81	0.711	2.7	<0.0015	<5	52	163	514	740,160
6/10/17	7.66	0.734	3.2	<0.0015	<5	51	157	600	864,000
6/11/17	7.75	0.730	2.6	0.0017	6	51.2	159	308	443,520
6/12/17	7.94	0.690	3.1	<0.0015	<5	52	162	227	326,880
6/13/17	7.63	0.720	1.3	0.0021	<5	53.5	167	525	756,000
6/14/17	8.08	0.739	3	<0.0015	<5	51	158	725	1,044,000
6/15/17	7.49	0.742	1	<0.0015	<5	52	161	848	1,221,120
12/18/17	7.21	0.590	5	-	<5	-	-	-	0
12/19/17	6.91	0.650	8.2	-	>5	-	-	700	1,008,000
12/20/17	7.48	0.460	0	-	<5	-	-	707	1,018,080
12/21/17	7.76	0.540	1	-	<5	-	-	715	1,029,600
12/22/17	7.35	0.550	4.8	-	<5	-	-	1360	1,958,400

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

Equalization Pond Discharge Monitoring
General Chemistry, Metals, and VOCs/sVOCs
2017 Annual Surface Water Quality Monitoring Report
Clean Harbors Canada Inc.

Sample Location:			**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
General Chemistry								
Alkalinity, total (as CaCO3)	mg/L	-	142	158	129	149	150	129
Ammonia-N	mg/L	-	7.76	3.21	0.727	0.141	0.114	0.446
Bromide	mg/L	-	0.25	0.55	0.24	0.35	0.50	0.32
Chemical oxygen demand (COD)	mg/L	-	11	16	17	14	ND (10)	11
Chloride	mg/L	-	41.4	60.9	50.2	56.5	53.9	55.0
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
Conductivity	umhos/cm	-	728	777	698	769	750	660
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020) J	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	4.3	5.1	5.0	4.7	4.5	4.3
Fluoride	mg/L	-	0.550	0.546	0.505	0.490	0.550	0.554
Hardness	mg/L	-	293	303	275	295	290	264
Nitrate (as N)	mg/L	-	0.241	0.471	0.400	0.254	0.084	0.170
Nitrite (as N)	mg/L	-	0.010	0.017	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	7.89	7.87	8.05	8.16	8.14	7.85
Phenolics (total)	mg/L	0.001	**0.0015**	**0.0044**	**0.0017**	**0.0026**	**0.0025**	ND (0.0010)
Phosphorus	mg/L	0.01	**0.0165**	**0.0241**	**0.0155**	**0.0188**	**0.0112**	**0.0197**
Sulfate	mg/L	-	121	165	147	153	156	135
Total dissolved solids (TDS)	mg/L	-	447	527	457	450	468	414
Total kjeldahl nitrogen (TKN)	mg/L	-	6.49	3.33	0.91	0.50	0.45	0.72
Total suspended solids (TSS)	mg/L	-	6.6	7.4	3.1	7.5	4.3	ND (2.0)
Un-ionized ammonia	mg/L	0.02	**0.0234**	0.0178	0.00397	0.00232	0.00224	0.00188
Field Parameters								
pH, field	s.u.	6.5-8.5	7.37	7.60	7.63	7.87	7.65	7.48
Temperature, field	Deg C	-	3.0	4.0	3.0	10.0	19.0	4.0
Metals								
Aluminum	mg/L	0.075	**0.193**	**0.283**	**0.250**	**0.432**	0.038	**0.147**
Antimony	mg/L	0.02	0.00044	0.00041	0.00043	0.00040	0.00042	0.00037
Arsenic	mg/L	0.005	0.00108	0.00083	0.00081	0.00106	0.00134	0.00124
Barium	mg/L	-	0.0529	0.0480	0.0397	0.0430	0.0429	0.0406
Beryllium	mg/L	0.011	ND (0.00010)	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)	ND (0.000050)
Boron	mg/L	0.2	0.115	0.098	0.094	0.141	0.173	**0.245**
Cadmium	mg/L	0.0002	ND (0.000030)	0.000030	0.000033	0.000036	ND (0.000040)	ND (0.000030)
Calcium	mg/L	-	84.0	85.1	77.7	79.9	76.9	69.8
Cobalt	mg/L	0.0009	0.00023	0.00031	0.00029	0.00039	0.00020	0.00017
Copper	mg/L	0.005	ND (0.0010)	0.0013	0.0016	0.0014	0.0011	ND (0.0010)
Iron	mg/L	0.3	0.201	0.246	0.196	**0.362**	ND (0.050)	0.132
Lead	mg/L	0.005	0.00020	0.00025	0.00022	0.00030	ND (0.00010)	ND (0.00010)
Magnesium	mg/L	-	20.2	22.0	19.7	23.1	23.9	21.7
Manganese	mg/L	-	0.0336	0.0167	0.0104	0.0402	0.0515	0.0504
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	**0.0522**	0.0374	0.0354	0.0391	**0.0535**	**0.0429**
Nickel	mg/L	0.025	0.00248	0.00310	0.00285	0.00304	0.00270	0.00256
Potassium	mg/L	-	4.54	5.12	4.78	4.45	4.48	4.91
Selenium	mg/L	0.1	0.00158	0.00208	0.00182	0.00147	0.00143	0.000702
Silicon	mg/L	-	1.45	2.40	2.23	2.46	1.27	1.12
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	31.9	34.7	31.3	35.5	36.9	33.3
Strontium	mg/L	-	0.681	0.675	0.563	0.587	0.624	0.588

Table 6

Equalization Pond Discharge Monitoring
General Chemistry, Metals, and VOCs/sVOCs
2017 Annual Surface Water Quality Monitoring Report
Clean Harbors Canada Inc.

Sample Location:			**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
Thallium	mg/L	0.0003	0.000014	0.000015	0.000015	0.000021	0.000020	ND (0.000010)
Tin	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00062	0.00079	0.00069	0.00108	ND (0.00050)	0.00054
Zinc	mg/L	0.03	ND (0.0030)	0.0085	ND (0.0030)	ND (0.0030)	0.0032	ND (0.0030)
Volatiles								
1,1,1,2-Tetrachloroethane	µg/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	µg/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	µg/L	70	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	µg/L	800	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethane	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	µg/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	µg/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	µg/L	0.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	µg/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	µg/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	400	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Acetone	µg/L	-	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Benzene	µg/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	µg/L	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromoform	µg/L	60	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	µg/L	0.9	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlorobenzene	µg/L	15	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloroethane	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform (Trichloromethane)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dibromochloromethane	µg/L	40	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dichlorodifluoromethane (CFC-12)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	µg/L	8	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	µg/L	2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methyl tert butyl ether (MTBE)	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	µg/L	100	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
o-Xylene	µg/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Styrene	µg/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	µg/L	50	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	µg/L	0.8	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,3-Dichloropropene	µg/L	7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	µg/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trihalomethanes	µg/L	-	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Vinyl chloride	µg/L	600	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	µg/L	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)

Table 6

Equalization Pond Discharge Monitoring
General Chemistry, Metals, and VOCs/sVOCs
2017 Annual Surface Water Quality Monitoring Report
Clean Harbors Canada Inc.

Sample Location:			**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**	**EQ Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
Semi-Volatiles								
1,2,4-Trichlorobenzene	µg/L	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,2-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,3-Dichlorobenzene	µg/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,4-Dichlorobenzene	µg/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,3,4,5-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,4,6-Tetrachlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,6-Trichlorophenol	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,5-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,6-Trichlorophenol	µg/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dichlorophenol	µg/L	0.2	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2,4-Dimethylphenol	µg/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	µg/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,6-Dinitrotoluene	µg/L	6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	µg/L	7	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2-Methylnaphthalene	µg/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
3,3'-Dichlorobenzidine	µg/L	0.6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
4-Chloroaniline	µg/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Acenaphthene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Acenaphthylene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Anthracene	µg/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)anthracene	µg/L	0.0004	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)pyrene	µg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Benzo(b)fluoranthene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(g,h,i)perylene	µg/L	0.00002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(k)fluoranthene	µg/L	0.0002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
bis(2-Chloroethyl)ether	µg/L	200	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	0.6	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Chrysene	µg/L	0.0001	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dibenz(a,h)anthracene	µg/L	0.002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Diethyl phthalate	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dimethyl phthalate	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluoranthene	µg/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluorene	µg/L	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Hexachlorobenzene	µg/L	0.0065	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)
Hexachlorobutadiene	µg/L	0.009	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Indeno(1,2,3-cd)pyrene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Naphthalene	µg/L	7	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pentachlorophenol	µg/L	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Perylene	µg/L	0.00007	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Phenanthrene	µg/L	0.03	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pyrene	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Notes:

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

Table 7

Equalization Pond Discharge Monitoring
Microtox
2017 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 Date:		**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**
Parameters	**Units**					
Clarification	none	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)
Color (true)	none	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)
EC 20 (15min)	%	>100	90.1	>100	>100	>100
EC 20 (5min)	%	>100	69.6	>100	>100	>100
EC 50 (15min)	%	>100	>100	>100	>100	>100
EC 50 (5min)	%	>100	>100	>100	>100	>100
Final pH	s.u.	7.9	7.6	8.0	7.9	7.6
Initial pH	s.u.	7.9	7.6	8.0	7.9	7.6
Interpretation	none	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)
Turbidity	none	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)	ND (0.0)

Table 8

East Pond Surface Water Characterization
2017 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.

Sample Location:			**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
General Chemistry								
Alkalinity, total (as CaCO3)	mg/L	-	33	23	105	126	117	149
Ammonia-N	mg/L	-	2.84	1.30	0.125	0.108	0.147	1.36
Bromide	mg/L	-	ND (0.10)	ND (0.10)	0.23	0.47	0.44	0.29
Chemical oxygen demand (COD)	mg/L	-	ND (10)	ND (10)	ND (10)	23	12	13
Chloride	mg/L	-	9.85	4.14	33.2	40.7	55.3	48.6
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)	ND (0.0010)	**0.0015**	ND (0.0010)	ND (0.0010)
Conductivity	umhos/cm	-	156	75.6	636	723	683	669
Cyanide (total)	mg/L	0.005	**0.0085**	ND (0.0020)	ND (0.0020) J	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	2.4	1.4	5.0	4.8	5.0	5.4
Fluoride	mg/L	-	0.163	0.074	0.474	0.609	0.529	0.659
Hardness	mg/L	-	59	43	254	283	262	272
Nitrate (as N)	mg/L	-	0.160	ND (0.020)	0.172	0.114	ND (0.020)	0.093
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	7.85	7.44	8.19	8.14	8.29	8.03
Phenolics (total)	mg/L	0.001	**0.0032**	**0.0043**	ND (0.0010)	**0.0024**	**0.0031**	ND (0.0010)
Phosphorus	mg/L	0.01	**0.0437**	**0.0224**	**0.0420**	**0.0372**	**0.0196**	**0.0478**
Sulfate	mg/L	-	24.7	9.89	143	175	154	131
Total dissolved solids (TDS)	mg/L	-	86	44	400	459	421	426
Total kjeldahl nitrogen (TKN)	mg/L	-	3.54	1.55	0.57	ND (1.5)	0.55	2.12
Total suspended solids (TSS)	mg/L	-	7.9	4.9	20.5	14.0	9.3	2.9
Un-ionized ammonia	mg/L	0.02	0.00217	0.00736	0.00191	0.00142	0.00496	0.00586
Field Parameters								
pH, field	s.u.	6.5-8.5	6.81	7.61	8.08	7.77	7.89	7.49
Temperature, field	Deg C	-	2.0	4.0	3.0	10.0	19.0	4.0
Metals								
Aluminum	mg/L	0.075	**1.08**	**0.607**	**0.689**	**1.16**	**0.254**	**0.351**
Antimony	mg/L	0.02	0.00021	0.00017	0.00047	0.00055	0.00054	0.00033
Arsenic	mg/L	0.005	0.00060	0.00035	0.00102	0.00133	0.00119	0.00112
Barium	mg/L	-	0.0162	0.00936	0.0413	0.0451	0.0396	0.0601
Beryllium	mg/L	0.011	ND (0.00010)	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)	ND (0.000050)
Boron	mg/L	0.2	0.016	ND (0.010)	0.071	0.101	0.112	0.075
Cadmium	mg/L	0.0002	0.000067	0.000058	0.000049	ND (0.000090)	ND (0.000040)	ND (0.000040)
Calcium	mg/L	-	17.3	11.6	69.9	76.5	67.6	78.8
Cobalt	mg/L	0.0009	0.00049	0.00033	0.00052	0.00087	0.00037	0.00039
Copper	mg/L	0.005	0.0019	0.0015	0.0021	0.0027	0.0017	0.0016
Iron	mg/L	0.3	**0.866**	**0.506**	**0.572**	**1.17**	0.240	**0.325**
Lead	mg/L	0.005	0.00131	0.00212	0.00054	0.00177	0.00035	0.00032
Magnesium	mg/L	-	3.88	3.44	19.4	22.4	22.5	18.3
Manganese	mg/L	-	0.0268	0.0218	0.0354	0.0542	0.0467	0.0564
Mercury	mg/L	0.0002	0.000011	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.00911	0.00457	**0.0405**	**0.0663**	**0.0654**	**0.0422**
Nickel	mg/L	0.025	0.00155	0.00116	0.00279	0.00364	0.00211	0.00317
Potassium	mg/L	-	1.82	0.947	4.35	4.94	4.80	7.91
Selenium	mg/L	0.1	0.000796	0.000429	0.00225	0.00270	0.00223	0.00109
Silicon	mg/L	-	2.72	1.46	3.07	3.81	1.81	2.39
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	6.00	3.56	25.0	28.9	30.0	28.5
Strontium	mg/L	-	0.121	0.0748	0.583	0.680	0.625	0.605

Table 8

East Pond Surface Water Characterization
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Lambton Facility
Clean Harbors Canada Inc.

Sample Location:			**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
Thallium	mg/L	0.0003	0.000034	0.000019	0.000036	0.000045	0.000024	0.000023
Tin	mg/L	-	0.00016	0.00017	ND (0.00010)	0.00013	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00251	0.00155	0.00160	0.00263	0.00103	0.00089
Zinc	mg/L	0.03	0.0094	0.0104	0.0052	0.0148	ND (0.0030)	0.0051
Volatiles								
1,1,1,2-Tetrachloroethane	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	70	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	800	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethane	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	400	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Acetone	ug/L	-	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Benzene	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromoform	ug/L	60	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	0.9	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlorobenzene	ug/L	15	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloroethane	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform (Trichloromethane)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dibromochloromethane	ug/L	40	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	ug/L	8	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methyl tert butyl ether (MTBE)	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	ug/L	100	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
o-Xylene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Styrene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	50	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	0.8	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,3-Dichloropropene	ug/L	7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trihalomethanes	ug/L	-	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Vinyl chloride	ug/L	600	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)

Table 8

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Clean Harbors Canada Inc.

Sample Location:			**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**	**East Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
Semi-Volatiles								
1,2,4-Trichlorobenzene	ug/L	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,2-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,3-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,4-Dichlorobenzene	ug/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,3,4,5-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,4,6-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,6-Trichlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,5-Trichlorophenol	ug/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,6-Trichlorophenol	ug/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dichlorophenol	ug/L	0.2	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2,4-Dimethylphenol	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,6-Dinitrotoluene	ug/L	6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	7	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
3,3'-Dichlorobenzidine	ug/L	0.6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
4-Chloroaniline	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Acenaphthene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Acenaphthylene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Anthracene	ug/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)anthracene	ug/L	0.0004	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)pyrene	ug/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Benzo(b)fluoranthene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(g,h,i)perylene	ug/L	0.00002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(k)fluoranthene	ug/L	0.0002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
bis(2-Chloroethyl)ether	ug/L	200	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Chrysene	ug/L	0.0001	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dibenz(a,h)anthracene	ug/L	0.002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Diethyl phthalate	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluoranthene	ug/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluorene	ug/L	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Hexachlorobenzene	ug/L	0.0065	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)
Hexachlorobutadiene	ug/L	0.009	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Naphthalene	ug/L	7	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pentachlorophenol	ug/L	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Perylene	ug/L	0.00007	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Phenanthrene	ug/L	0.03	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pyrene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).
J - Estimated concentration.
ND - Not detected at the associated reporting limit.
- - Not applicable.
1. Average calculated as half the detection limit for values not detected above their reporting limit.

Table 9

West Pond Surface Water Characterization
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Lambton Facility
Clean Harbors Canada Inc.

Sample Location:			West Pond	West Pond	West Pond	West Pond	West Pond	West Pond
Sample Date:			1/25/2017	2/21/2017	3/20/2017	5/8/2017	6/5/2017	12/20/2017
Parameters	**Units**	**PWQO**						
General Chemistry								
Alkalinity, total (as CaCO3)	mg/L	-	25	29	107	152	146	140
Ammonia-N	mg/L	-	4.76	6.07	0.349	0.163	0.327	0.490
Bromide	mg/L	-	ND (0.10)	ND (0.10)	0.23	0.31	0.44	0.36
Chemical oxygen demand (COD)	mg/L	-	ND (10)	ND (10)	18	15	17	ND (10)
Chloride	mg/L	-	6.36	6.43	43.8	55.9	43.2	54.3
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
Conductivity	umhos/cm	-	109	98.1	624	766	738	666
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020) J	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	2.1	1.9	4.5	5.8	6.1	5.5
Fluoride	mg/L	-	0.131	0.098	0.438	0.500	0.622	0.572
Hardness	mg/L	-	39	47	229	298	282	268
Nitrate (as N)	mg/L	-	0.056	ND (0.020)	0.274	0.147	ND (0.020)	0.156
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	7.48	7.64	8.09	8.19	8.24	8.23
Phenolics (total)	mg/L	0.001	**0.0027**	**0.0040**	**0.0012**	**0.0036**	**0.0039**	ND (0.0010)
Phosphorus	mg/L	0.01	**0.0157**	**0.0153**	**0.0190**	**0.0320**	**0.0234**	**0.0233**
Sulfate	mg/L	-	15.3	11.8	131	152	169	129
Total dissolved solids (TDS)	mg/L	-	--	51	389	461	446	417
Total kjeldahl nitrogen (TKN)	mg/L	-	4.93	6.46	0.59	0.61	0.70	0.83
Total suspended solids (TSS)	mg/L	-	2.5	3.5	2.1	8.2	2.1	ND (2.0)
Un-ionized ammonia	mg/L	0.02	0.00267	**0.0255**	0.00322	0.00276	0.00705	0.00725
Field Parameters								
pH, field	s.u.	6.5-8.5	6.64	7.48	7.86	7.88	7.69	8.03
Temperature, field	Deg C	-	3.0	4.0	3.0	10.0	19.0	4.0
Metals								
Aluminum	mg/L	0.075	0.043	0.047	**0.278**	**0.528**	**0.226**	**0.162**
Antimony	mg/L	0.02	0.00012	0.00016	0.00037	0.00042	0.00045	0.00034
Arsenic	mg/L	0.005	0.00019	0.00021	0.00077	0.00124	0.00146	0.00134
Barium	mg/L	-	0.00859	0.00965	0.0334	0.0448	0.0380	0.0498
Beryllium	mg/L	0.011	ND (0.00010)	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)	ND (0.000050)
Boron	mg/L	0.2	0.016	0.014	0.084	0.148	0.147	0.117
Cadmium	mg/L	0.0002	0.000018	0.000015	0.000044	0.000038	ND (0.000040)	ND (0.000030)
Calcium	mg/L	-	12.1	13.8	63.7	81.1	72.8	74.5
Cobalt	mg/L	0.0009	ND (0.00010)	ND (0.00010)	0.00030	0.00050	0.00030	0.00020
Copper	mg/L	0.005	ND (0.0010)	ND (0.0010)	0.0016	0.0018	0.0015	0.0010
Iron	mg/L	0.3	ND (0.050)	ND (0.050)	0.216	**0.456**	0.225	0.138
Lead	mg/L	0.005	0.00015	0.00017	0.00031	0.00037	0.00020	0.00013
Magnesium	mg/L	-	2.22	3.00	17.0	23.1	24.4	19.9
Manganese	mg/L	-	0.0258	0.0409	0.0209	0.0568	0.0236	0.0302
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.00476	0.00436	0.0291	0.0397	**0.0481**	0.0386
Nickel	mg/L	0.025	ND (0.00050)	ND (0.00050)	0.00256	0.00323	0.00307	0.00249
Potassium	mg/L	-	0.921	0.808	3.97	4.60	4.34	5.37
Selenium	mg/L	0.1	0.000265	0.000256	0.00152	0.00163	0.00149	0.000728
Silicon	mg/L	-	0.307	0.342	2.06	2.69	1.19	1.69
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	3.79	4.39	25.3	35.9	37.0	32.3
Strontium	mg/L	-	0.0944	0.0931	0.463	0.599	0.597	0.615
Thallium	mg/L	0.0003	ND (0.000010)	ND (0.000010)	0.000018	0.000020	0.000016	0.000011
Tin	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)

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Sample Location:			West Pond	West Pond	West Pond	West Pond	West Pond	West Pond
Sample Date:			1/25/2017	2/21/2017	3/20/2017	5/8/2017	6/5/2017	12/20/2017
Parameters	**Units**	**PWQO**						
Vanadium	mg/L	0.006	ND (0.00050)	ND (0.00050)	0.00072	0.00129	0.00079	0.00052
Zinc	mg/L	0.03	ND (0.0030)	ND (0.0030)	0.0047	ND (0.0030)	ND (0.0030)	0.0140
Volatiles								
1,1,1,2-Tetrachloroethane	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	70	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	800	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethane	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	400	ND (60)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Acetone	ug/L	-	58	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Benzene	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromoform	ug/L	60	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	0.9	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlorobenzene	ug/L	15	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloroethane	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform (Trichloromethane)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dibromochloromethane	ug/L	40	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	ug/L	8	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methyl tert butyl ether (MTBE)	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	ug/L	100	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
o-Xylene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Styrene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	50	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	0.8	0.62	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,3-Dichloropropene	ug/L	7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trihalomethanes	ug/L	-	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Vinyl chloride	ug/L	600	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)
Semi-Volatiles								
1,2,4-Trichlorobenzene	ug/L	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,2-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,3-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1,4-Dichlorobenzene	ug/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
1-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)

Table 9

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Sample Location:			**West Pond**	**West Pond**	**West Pond**	**West Pond**	**West Pond**	**West Pond**
Sample Date:			**1/25/2017**	**2/21/2017**	**3/20/2017**	**5/8/2017**	**6/5/2017**	**12/20/2017**
Parameters	**Units**	**PWQO**						
2,3,4,5-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,4,6-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,3,6-Trichlorophenol	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,5-Trichlorophenol	ug/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4,6-Trichlorophenol	ug/L	18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dichlorophenol	ug/L	0.2	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2,4-Dimethylphenol	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	4	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,6-Dinitrotoluene	ug/L	6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	7	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
2-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
3,3'-Dichlorobenzidine	ug/L	0.6	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
4-Chloroaniline	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Acenaphthene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Acenaphthylene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Anthracene	ug/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)anthracene	ug/L	0.0004	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(a)pyrene	ug/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Benzo(b)fluoranthene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(g,h,i)perylene	ug/L	0.00002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Benzo(k)fluoranthene	ug/L	0.0002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
bis(2-Chloroethyl)ether	ug/L	200	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Chrysene	ug/L	0.0001	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dibenz(a,h)anthracene	ug/L	0.002	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Diethyl phthalate	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluoranthene	ug/L	0.0008	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Fluorene	ug/L	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Hexachlorobenzene	ug/L	0.0065	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)	ND (0.040)
Hexachlorobutadiene	ug/L	0.009	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Naphthalene	ug/L	7	0.65	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pentachlorophenol	ug/L	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Perylene	ug/L	0.00007	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Phenanthrene	ug/L	0.03	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Pyrene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).
J - Estimated concentration.
ND - Not detected at the associated reporting limit.
- - Not applicable.
1. Average calculated as half the detection limit for values not detected above their reporting limit.

Table 10

Off-Site Surface Water Monitoring - STN6 and STN6A
2017 Annual Surface Water Quality Monitoring Report
Lambton Facility
Clean Harbors Canada Inc.

Sample Location:			**STN6**	**STN6A**
Sample Date:			**5/8/2017**	**5/8/2017**
Parameters	**Units**	**PWQO**		
General Chemistry				
Alkalinity, total (as CaCO3)	mg/L	-	193	200
Ammonia-N	mg/L	-	0.767	0.390
Bromide	mg/L	-	ND (0.10)	ND (0.10)
Chemical oxygen demand (COD)	mg/L	-	36	32
Chloride	mg/L	-	14.9	16.7
Chromium VI (hexavalent)	mg/L	0.001	ND (0.0010)	ND (0.0010)
Conductivity	umhos/cm	-	514	534
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	10.5	10.3
Fluoride	mg/L	-	0.210	0.216
Hardness	mg/L	-	238	248
Nitrate (as N)	mg/L	-	5.59	5.53
Nitrite (as N)	mg/L	-	0.035	0.031
pH, lab	s.u.	6.5-8.5	8.17	8.16
Phenolics (total)	mg/L	0.001	**0.0021**	ND (0.0010)
Phosphorus	mg/L	0.01	**0.365**	**0.279**
Sulfate	mg/L	-	35.7	39.3
Total dissolved solids (TDS)	mg/L	-	329	328
Total kjeldahl nitrogen (TKN)	mg/L	-	2.21	1.68
Total suspended solids (TSS)	mg/L	-	13.5	13.3
Un-ionized ammonia	mg/L	0.02	0.0148	0.00322
Field Parameters				
pH, field	s.u.	6.5-8.5	7.99	7.59
Temperature, field	Deg C	-	8.5	9.3
Metals				
Aluminum	mg/L	0.075	**2.34**	**2.01**
Antimony	mg/L	0.02	0.00013	0.00013
Arsenic	mg/L	0.005	0.00125	0.00111
Barium	mg/L	-	0.0389	0.0353
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.033	0.036
Cadmium	mg/L	0.0002	0.000058	0.000048
Calcium	mg/L	-	57.1	60.7
Cobalt	mg/L	0.0009	0.00087	0.00079
Copper	mg/L	0.005	0.0049	0.0040
Iron	mg/L	0.3	**2.20**	**1.92**
Lead	mg/L	0.005	0.00132	0.00111
Magnesium	mg/L	-	23.1	23.5
Manganese	mg/L	-	0.0223	0.0212
Mercury	mg/L	0.0002	ND (0.000010)	ND (0.000010)
Molybdenum	mg/L	0.04	0.00226	0.00307
Nickel	mg/L	0.025	0.00391	0.00351
Potassium	mg/L	-	3.49	3.20
Selenium	mg/L	0.1	0.00101	0.000961
Silicon	mg/L	-	7.21	6.62
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)
Sodium	mg/L	-	8.46	9.70
Strontium	mg/L	-	0.187	0.206
Thallium	mg/L	0.0003	0.000035	0.000031
Tin	mg/L	-	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00489	0.00429
Zinc	mg/L	0.03	0.0092	0.0080

Notes:

0.01 Analytical results above the Provincial Water Quality Objectives (PWQO).
ND - Not detected at the associated reporting limit.
- - Not applicable.
1. Average calculated as half the detection limit for values not detected above their reporting limit.

Appendices

Appendix A
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

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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

James R. Yardley

JRY/mg/2

cc: Mike Parker, Clean Harbors Canada

Table 1

Current Surface Water Monitoring Program
Lambton Facility, Clean Harbors

		Current Surface Water Sampling Program		
Monitoring Location	**Parameter**	**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		■ consecutive day samples	■ consecutive day samples
	Acute Toxicity - 48 hr - Daphnia Magna		■ consecutive day samples	■ consecutive day samples
	Chronic Toxicity - 7 day - Flathead Minnows		■	
	Chronic Toxicity - 7 day - Ceriodaphnia Dubia		■	
	Free cyanide, nitrite, nitrate, TKN,		■ consecutive day samples	■ consecutive day samples
	Metals		■ consecutive day samples	■ consecutive day samples
EQ Pond	Benthic Invertebrates		■	
	Fish Presence		■	
	Dissolved Oxygen Profile		■	
	Secchi depth profile		■	
Effluent from SWTP	General Chemistry (1)		■	■
	Metals		■	■
	sVOCs		■	■
	Pesticides		■	■
Influent to SWTP	General Chemistry (1)		■	■
	Metals		■	■
	sVOCs		■	■
	Pesticides		■	■
STN6 (off-site background)	General Chemistry (1)		■	■
	Metals		■	■
STN6A (off-site downstream)	General Chemistry (1)		■	■
	Metals		■	■

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

Table 2

Proposed Surface Water Monitoring Program
Lambton Facility, Clean Harbors

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

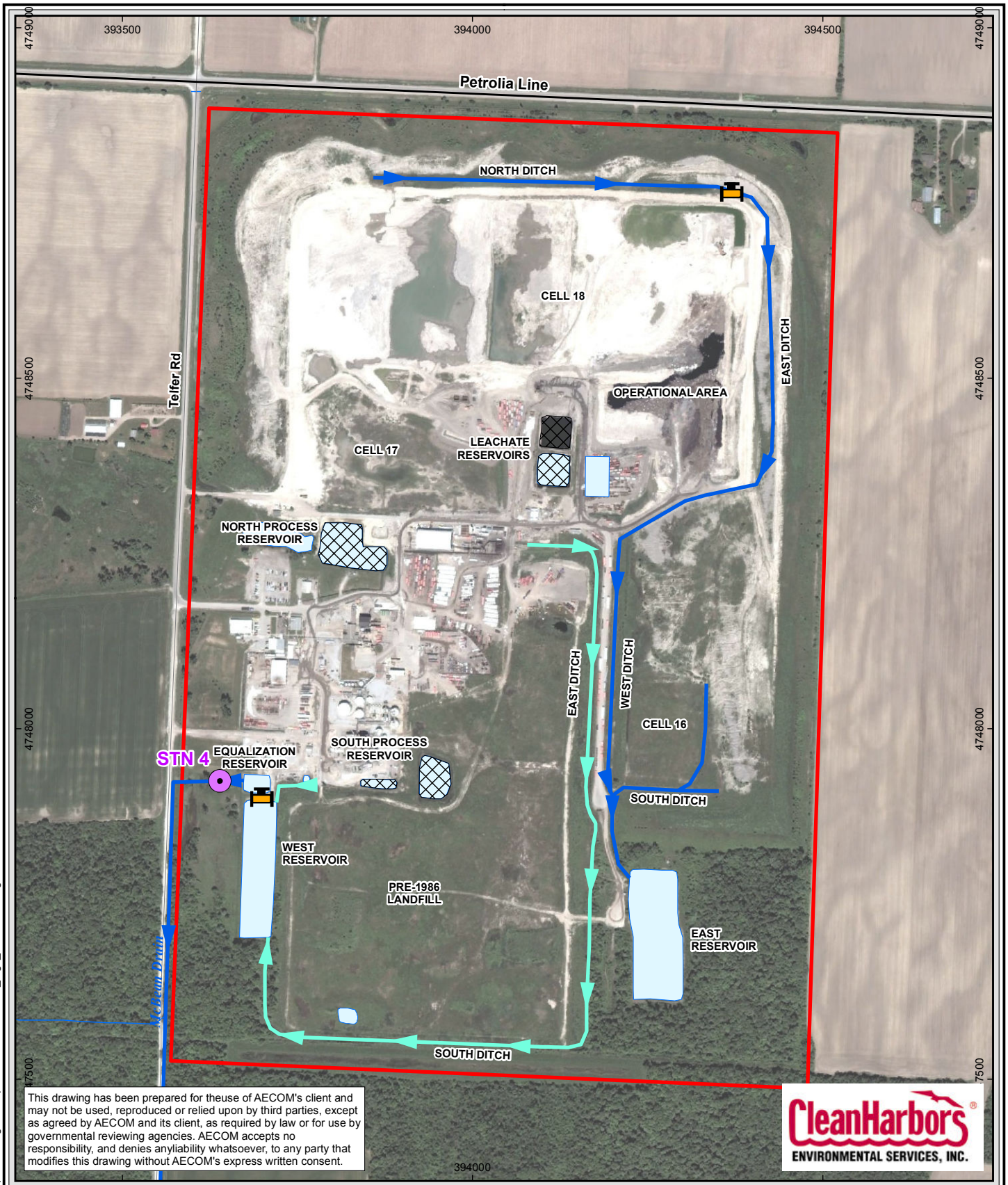
Notes:

(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 CaCO3), 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-Dichlorethene, 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)flouranthene/Benzo(j)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2-Chloroethy)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



Basemapping from Ontario Ministry of Natural Resources
Orthophotography:

N
W E
S

Metres
0 37.5 75 150 225
1:7,500
UTM Zone 17N, NAD 83

Legend

- Water Quality Station
- Pre-1986 Landfill Ditch System
- Post-1986 Landfill Ditch System
- Pumping Equipment

Water Features

- Non-Impacted/Treated Surface Water Reservoir
- Process Reservoir
- Permanent Stream

Clean Harbors, Lambton, Ontario

Surface Water Management System

October 2014
60316888

AECOM

Figure 3

Path: P:\60272902\000-CADD\050 GIS WIP\Maps\Working\EA Report - 2014\60316888_Fig3_SurfWtrManagement.mxd

Petrolia Line

Petrolia Line

Equalization Reservoir

Kimball Rd

Kimball Rd

Rokeby Line

Telfer Rd

McBean Drain

Waterworks Rd

Norwood Drain

Mandaumin Rd

Mandaumin Rd

Burton Creek

STN 6

STN 6A

Moore Line

Shiloh Line

Mennen Drain

MacDonald Creek

Bear Creek

Waubuno Rd

Path: P:\60272902\000-CADD\050 GIS WIP\Maps\Working\EA Report - 2014\60316888_Fig4_SurfQuality_MonitoringLoc.mxd

Legend

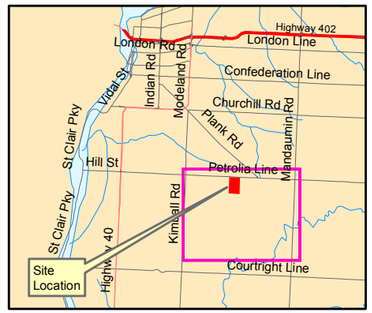
- Supplementary Off-Site Surface Water Monitoring Locations
- Waste Facility

Roads

- Major Road
- Local Road

Water Features

- Intermittent Stream
- Permanent Stream
- Waterbody



Basemapping from Ontario Ministry of Natural Resources Orthophotography:

N W E S

Metres

0 200 400 800 1,200 1,600

1:29,000

UTM Zone 17N, NAD 83

Clean Harbors Canada, Inc.

Supplementary Off-Site Surface Water Monitoring Locations

October 2014
60316888

AECOM

Figure 4

Appendix B
Analytical Data Collected During Effluent Discharge

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

Date Received: 26-JAN-17
Report Date: 02-FEB-17 14:59 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1883694

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883694-1 EQ POND Sampled By: CLIENT on 25-JAN-17 @ 11:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.37		0.10	pH		27-JAN-17	R3640993
Temperature, Client	3.0		-50	Deg. C		27-JAN-17	R3640993
Physical Tests							
Conductivity	728		3.0	umhos/cm		27-JAN-17	R3641414
Hardness (as CaCO3)	293	HTC	10	mg/L		27-JAN-17	
pH	7.89		0.10	pH units		27-JAN-17	R3641414
Total Suspended Solids	6.6		2.0	mg/L	31-JAN-17	01-FEB-17	R3644162
Total Dissolved Solids	447	DLDS	20	mg/L		29-JAN-17	R3643765
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	142		10	mg/L		26-JAN-17	R3640707
Unionized ammonia	0.0234		0.00060	mg/L		30-JAN-17	
Ammonia, Total (as N)	7.76	DLHC	0.20	mg/L		26-JAN-17	R3641495
Bromide (Br)	0.25		0.10	mg/L		27-JAN-17	R3642905
Chloride (Cl)	41.4		0.50	mg/L		27-JAN-17	R3642905
Fluoride (F)	0.550		0.020	mg/L		27-JAN-17	R3642905
Nitrate (as N)	0.241		0.020	mg/L		27-JAN-17	R3642905
Nitrite (as N)	0.010		0.010	mg/L		27-JAN-17	R3642905
Total Kjeldahl Nitrogen	6.49		0.15	mg/L	01-FEB-17	01-FEB-17	R3644508
Phosphorus, Total	0.0165		0.0030	mg/L	26-JAN-17	26-JAN-17	R3640936
Sulfate (SO4)	121		0.30	mg/L		27-JAN-17	R3642905
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-JAN-17	R3642867
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.3		1.0	mg/L		29-JAN-17	R3643113
Total Metals							
Aluminum (Al)-Total	0.193		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Antimony (Sb)-Total	0.00044		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Arsenic (As)-Total	0.00108		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Barium (Ba)-Total	0.0529		0.00020	mg/L	26-JAN-17	26-JAN-17	R3641273
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Boron (B)-Total	0.115		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Cadmium (Cd)-Total	<0.000030	DLUI	0.000030	mg/L	26-JAN-17	26-JAN-17	R3641273
Calcium (Ca)-Total	84.0		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Cobalt (Co)-Total	0.00023		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Copper (Cu)-Total	<0.0010		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Iron (Fe)-Total	0.201		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Lead (Pb)-Total	0.00020		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Magnesium (Mg)-Total	20.2		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Manganese (Mn)-Total	0.0336		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		27-JAN-17	R3641449
Molybdenum (Mo)-Total	0.0522		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273

* 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
L1883694-1 EQ POND Sampled By: CLIENT on 25-JAN-17 @ 11:00 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00248		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Potassium (K)-Total	4.54		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Selenium (Se)-Total	0.00158		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silicon (Si)-Total	1.45		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silver (Ag)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Sodium (Na)-Total	31.9		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Strontium (Sr)-Total	0.681		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Thallium (Tl)-Total	0.000014		0.000010	mg/L	26-JAN-17	26-JAN-17	R3641273
Tin (Sn)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Vanadium (V)-Total	0.00062		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	26-JAN-17	26-JAN-17	R3641273
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		27-JAN-17	R3642473
Aggregate Organics							
COD	11		10	mg/L		31-JAN-17	R3643940
Phenols (4AAP)	0.0015		0.0010	mg/L		27-JAN-17	R3642968
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-JAN-17	R3641215
Benzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Bromodichloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Bromoform	<1.0		1.0	ug/L		27-JAN-17	R3641215
Bromomethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Carbon tetrachloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
Chlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dibromochloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroform	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,2-Dibromoethane	<0.20		0.20	ug/L		27-JAN-17	R3641215
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,1-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,2-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichloromethane	<2.0		2.0	ug/L		27-JAN-17	R3641215
1,2-Dichloropropane	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Ethylbenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215

* 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
L1883694-1 EQ POND Sampled By: CLIENT on 25-JAN-17 @ 11:00 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Methyl Ethyl Ketone	<20		20	ug/L		27-JAN-17	R3641215
Methyl Isobutyl Ketone	<20		20	ug/L		27-JAN-17	R3641215
MTBE	<0.50		0.50	ug/L		27-JAN-17	R3641215
Styrene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Tetrachloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Toluene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichlorofluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Vinyl chloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
o-Xylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
m+p-Xylenes	<1.0		1.0	ug/L		27-JAN-17	R3641215
Xylenes (Total)	<1.1		1.1	ug/L		27-JAN-17	
Surrogate: 4-Bromofluorobenzene	104.5		70-130	%		27-JAN-17	R3641215
Surrogate: 1,4-Difluorobenzene	107.7		70-130	%		27-JAN-17	R3641215
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-JAN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	01-FEB-17	R3644465
Surrogate: 2,4,6-Tribromophenol	101.3		40-150	%	30-JAN-17	01-FEB-17	R3644465
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Acenaphthylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)pyrene	<0.050		0.050	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(b)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(ghi)perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(k)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
4-Chloroaniline	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Chlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Chrysene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,3-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,4-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883694-1 EQ POND Sampled By: CLIENT on 25-JAN-17 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dichlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Diethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dimethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dimethylphenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrophenol	<1.0		1.0	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,6-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluorene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Hexachlorobenzene	<0.040		0.040	ug/L	30-JAN-17	02-FEB-17	R3644328
Hexachlorobutadiene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Naphthalene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Pentachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Phenanthrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Surrogate: 2-Fluorobiphenyl	99.5		40-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: Nitrobenzene d5	101.7		50-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: p-Terphenyl d14	111.5		40-130	%	30-JAN-17	02-FEB-17	R3644328
L1883694-2 EAST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 12:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	6.81		0.10	pH		27-JAN-17	R3640993
Temperature, Client	2.0		-50	Deg. C		27-JAN-17	R3640993
Physical Tests							
Conductivity	156		3.0	umhos/cm		27-JAN-17	R3641414
Hardness (as CaCO3)	59	HTC	10	mg/L		27-JAN-17	
pH	7.85		0.10	pH units		27-JAN-17	R3641414
Total Suspended Solids	7.9		2.0	mg/L	31-JAN-17	01-FEB-17	R3644173
Total Dissolved Solids	86	DLDS	13	mg/L		29-JAN-17	R3643765
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	33		10	mg/L		26-JAN-17	R3640707

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883694-2 EAST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 12:00 Matrix: WATER							
Anions and Nutrients							
Unionized ammonia	0.00217		0.000076	mg/L		31-JAN-17	
Ammonia, Total (as N)	2.84	DLHC	0.10	mg/L		30-JAN-17	R3642913
Bromide (Br)	<0.10		0.10	mg/L		27-JAN-17	R3642905
Chloride (Cl)	9.85		0.50	mg/L		27-JAN-17	R3642905
Fluoride (F)	0.163		0.020	mg/L		27-JAN-17	R3642905
Nitrate (as N)	0.160		0.020	mg/L		27-JAN-17	R3642905
Nitrite (as N)	<0.010		0.010	mg/L		27-JAN-17	R3642905
Total Kjeldahl Nitrogen	3.54		0.15	mg/L	01-FEB-17	01-FEB-17	R3644508
Phosphorus, Total	0.0437		0.0030	mg/L	26-JAN-17	26-JAN-17	R3640936
Sulfate (SO4)	24.7		0.30	mg/L		27-JAN-17	R3642905
Cyanides							
Cyanide, Total	0.0085		0.0020	mg/L		27-JAN-17	R3642867
Organic / Inorganic Carbon							
Dissolved Organic Carbon	2.4		1.0	mg/L		29-JAN-17	R3643113
Total Metals							
Aluminum (Al)-Total	1.08		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Antimony (Sb)-Total	0.00021		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Arsenic (As)-Total	0.00060		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Barium (Ba)-Total	0.0162		0.00020	mg/L	26-JAN-17	26-JAN-17	R3641273
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Boron (B)-Total	0.016		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Cadmium (Cd)-Total	0.000067		0.000010	mg/L	26-JAN-17	26-JAN-17	R3641273
Calcium (Ca)-Total	17.3		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Cobalt (Co)-Total	0.00049		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Copper (Cu)-Total	0.0019		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Iron (Fe)-Total	0.866		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Lead (Pb)-Total	0.00131		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Magnesium (Mg)-Total	3.88		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Manganese (Mn)-Total	0.0268		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Mercury (Hg)-Total	0.000011		0.000010	mg/L		27-JAN-17	R3641449
Molybdenum (Mo)-Total	0.00911		0.000050	mg/L	26-JAN-17	27-JAN-17	R3641273
Nickel (Ni)-Total	0.00155		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Potassium (K)-Total	1.82		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Selenium (Se)-Total	0.000796		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silicon (Si)-Total	2.72		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silver (Ag)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Sodium (Na)-Total	6.00		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Strontium (Sr)-Total	0.121		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Thallium (Tl)-Total	0.000034		0.000010	mg/L	26-JAN-17	26-JAN-17	R3641273
Tin (Sn)-Total	0.00016		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Vanadium (V)-Total	0.00251		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883694-2 EAST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 12:00 Matrix: WATER							
Total Metals							
Zinc (Zn)-Total	0.0094		0.0030	mg/L	26-JAN-17	26-JAN-17	R3641273
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		27-JAN-17	R3642473
Aggregate Organics							
COD	<10		10	mg/L		31-JAN-17	R3643940
Phenols (4AAP)	0.0032		0.0010	mg/L		27-JAN-17	R3642968
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-JAN-17	R3641215
Benzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Bromodichloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Bromoform	<1.0		1.0	ug/L		27-JAN-17	R3641215
Bromomethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Carbon tetrachloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
Chlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dibromochloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroform	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,2-Dibromoethane	<0.20		0.20	ug/L		27-JAN-17	R3641215
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,1-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,2-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichloromethane	<2.0		2.0	ug/L		27-JAN-17	R3641215
1,2-Dichloropropane	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Ethylbenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
n-Hexane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Methyl Ethyl Ketone	<20		20	ug/L		27-JAN-17	R3641215
Methyl Isobutyl Ketone	<20		20	ug/L		27-JAN-17	R3641215
MTBE	<0.50		0.50	ug/L		27-JAN-17	R3641215
Styrene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Tetrachloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Toluene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883694-2 EAST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 12:00 Matrix: WATER							
Volatile Organic Compounds							
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichlorofluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Vinyl chloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
o-Xylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
m+p-Xylenes	<1.0		1.0	ug/L		27-JAN-17	R3641215
Xylenes (Total)	<1.1		1.1	ug/L		27-JAN-17	
Surrogate: 4-Bromofluorobenzene	105.9		70-130	%		27-JAN-17	R3641215
Surrogate: 1,4-Difluorobenzene	107.0		70-130	%		27-JAN-17	R3641215
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-JAN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	01-FEB-17	R3644465
Surrogate: 2,4,6-Tribromophenol	104.8		40-150	%	30-JAN-17	01-FEB-17	R3644465
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Acenaphthylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)pyrene	<0.050		0.050	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(b)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(ghi)perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(k)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
4-Chloroaniline	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Chlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Chrysene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,3-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,4-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dichlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Diethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dimethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dimethylphenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrophenol	<1.0		1.0	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,6-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluorene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328

* 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
L1883694-2 EAST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 12:00 Matrix: WATER							
Semi-Volatile Organics							
Hexachlorobenzene	<0.040		0.040	ug/L	30-JAN-17	02-FEB-17	R3644328
Hexachlorobutadiene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Naphthalene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Pentachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Phenanthrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Surrogate: 2-Fluorobiphenyl	95.2		40-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: Nitrobenzene d5	98.7		50-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: p-Terphenyl d14	101.1		40-130	%	30-JAN-17	02-FEB-17	R3644328
L1883694-3 WEST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 11:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	6.64		0.10	pH		27-JAN-17	R3640993
Temperature, Client	3.0		-50	Deg. C		27-JAN-17	R3640993
Physical Tests							
Conductivity	109		3.0	umhos/cm		27-JAN-17	R3641414
Hardness (as CaCO3)	39	HTC	10	mg/L		27-JAN-17	
pH	7.48		0.10	pH units		27-JAN-17	R3641414
Total Suspended Solids	2.5		2.0	mg/L	31-JAN-17	01-FEB-17	R3644173
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	25		10	mg/L		26-JAN-17	R3640707
Unionized ammonia	0.00267		0.000056	mg/L		02-FEB-17	
Ammonia, Total (as N)	4.76	DLHC	0.10	mg/L		01-FEB-17	R3644996
Bromide (Br)	<0.10		0.10	mg/L		27-JAN-17	R3642905
Chloride (Cl)	6.36		0.50	mg/L		27-JAN-17	R3642905
Fluoride (F)	0.131		0.020	mg/L		27-JAN-17	R3642905
Nitrate (as N)	0.056		0.020	mg/L		27-JAN-17	R3642905
Nitrite (as N)	<0.010		0.010	mg/L		27-JAN-17	R3642905
Total Kjeldahl Nitrogen	4.93		0.15	mg/L	30-JAN-17	30-JAN-17	R3643054
Phosphorus, Total	0.0157		0.0030	mg/L	26-JAN-17	26-JAN-17	R3640936
Sulfate (SO4)	15.3		0.30	mg/L		27-JAN-17	R3642905
Cyanides							

* 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
L1883694-3 WEST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 11:30 Matrix: WATER							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-JAN-17	R3642867
Organic / Inorganic Carbon							
Dissolved Organic Carbon	2.1		1.0	mg/L		29-JAN-17	R3643113
Total Metals							
Aluminum (Al)-Total	0.043		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Antimony (Sb)-Total	0.00012		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Arsenic (As)-Total	0.00019		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Barium (Ba)-Total	0.00859		0.00020	mg/L	26-JAN-17	26-JAN-17	R3641273
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Boron (B)-Total	0.016		0.010	mg/L	26-JAN-17	26-JAN-17	R3641273
Cadmium (Cd)-Total	0.000018		0.000010	mg/L	26-JAN-17	26-JAN-17	R3641273
Calcium (Ca)-Total	12.1		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Copper (Cu)-Total	<0.0010		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Iron (Fe)-Total	<0.050		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Lead (Pb)-Total	0.00015		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Magnesium (Mg)-Total	2.22		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Manganese (Mn)-Total	0.0258		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		27-JAN-17	R3641449
Molybdenum (Mo)-Total	0.00476		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Potassium (K)-Total	0.921		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Selenium (Se)-Total	0.000265		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silicon (Si)-Total	0.307		0.050	mg/L	26-JAN-17	26-JAN-17	R3641273
Silver (Ag)-Total	<0.000050		0.000050	mg/L	26-JAN-17	26-JAN-17	R3641273
Sodium (Na)-Total	3.79		0.50	mg/L	26-JAN-17	26-JAN-17	R3641273
Strontium (Sr)-Total	0.0944		0.0010	mg/L	26-JAN-17	26-JAN-17	R3641273
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	26-JAN-17	26-JAN-17	R3641273
Tin (Sn)-Total	<0.00010		0.00010	mg/L	26-JAN-17	26-JAN-17	R3641273
Vanadium (V)-Total	<0.00050		0.00050	mg/L	26-JAN-17	26-JAN-17	R3641273
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	26-JAN-17	26-JAN-17	R3641273
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		27-JAN-17	R3642473
Aggregate Organics							
COD	<10		10	mg/L		31-JAN-17	R3643940
Phenols (4AAP)	0.0027		0.0010	mg/L		27-JAN-17	R3642968
Volatile Organic Compounds							
Acetone	58		20	ug/L		27-JAN-17	R3641215
Benzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Bromodichloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Bromoform	<1.0		1.0	ug/L		27-JAN-17	R3641215

* 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
L1883694-3 WEST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 11:30 Matrix: WATER							
Volatile Organic Compounds							
Bromomethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Carbon tetrachloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
Chlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dibromochloromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Chloroform	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,2-Dibromoethane	<0.20		0.20	ug/L		27-JAN-17	R3641215
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
1,1-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,2-Dichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Dichloromethane	<2.0		2.0	ug/L		27-JAN-17	R3641215
1,2-Dichloropropane	<0.50		0.50	ug/L		27-JAN-17	R3641215
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Ethylbenzene	<0.50		0.50	ug/L		27-JAN-17	R3641215
n-Hexane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Methyl Ethyl Ketone	<60	DLQ	60	ug/L		27-JAN-17	R3641215
Methyl Isobutyl Ketone	<20		20	ug/L		27-JAN-17	R3641215
MTBE	<0.50		0.50	ug/L		27-JAN-17	R3641215
Styrene	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Tetrachloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Toluene	0.62		0.50	ug/L		27-JAN-17	R3641215
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichloroethylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
Trichlorofluoromethane	<1.0		1.0	ug/L		27-JAN-17	R3641215
Vinyl chloride	<0.50		0.50	ug/L		27-JAN-17	R3641215
o-Xylene	<0.50		0.50	ug/L		27-JAN-17	R3641215
m+p-Xylenes	<1.0		1.0	ug/L		27-JAN-17	R3641215
Xylenes (Total)	<1.1		1.1	ug/L		30-JAN-17	
Surrogate: 4-Bromofluorobenzene	105.9		70-130	%		27-JAN-17	R3641215
Surrogate: 1,4-Difluorobenzene	106.6		70-130	%		27-JAN-17	R3641215
Trihalomethanes							

* 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
L1883694-3 WEST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 11:30 Matrix: WATER							
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		30-JAN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	01-FEB-17	R3644465
Surrogate: 2,4,6-Tribromophenol	101.1		40-150	%	30-JAN-17	01-FEB-17	R3644465
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Acenaphthylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(a)pyrene	<0.050		0.050	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(b)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(ghi)perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Benzo(k)fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
4-Chloroaniline	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Chlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Chrysene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,3-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
1,4-Dichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dichlorophenol	<0.30		0.30	ug/L	30-JAN-17	02-FEB-17	R3644328
Diethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Dimethylphthalate	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dimethylphenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrophenol	<1.0		1.0	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,6-Dinitrotoluene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluoranthene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Fluorene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Hexachlorobenzene	<0.040		0.040	ug/L	30-JAN-17	02-FEB-17	R3644328
Hexachlorobutadiene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
1-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2-Methylnaphthalene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
Naphthalene	0.65		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Pentachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Perylene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
Phenanthrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328

* 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
L1883694-3 WEST RETENTION POND Sampled By: CLIENT on 25-JAN-17 @ 11:30 Matrix: WATER							
Semi-Volatile Organics							
Pyrene	<0.20		0.20	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	30-JAN-17	02-FEB-17	R3644328
Surrogate: 2-Fluorobiphenyl	94.1		40-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: Nitrobenzene d5	98.2		50-130	%	30-JAN-17	02-FEB-17	R3644328
Surrogate: p-Terphenyl d14	108.5		40-130	%	30-JAN-17	02-FEB-17	R3644328

* 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	L1883694-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1883694-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L1883694-1
Matrix Spike	Phosphorus, Total	MS-B	L1883694-1, -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).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
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	SW846 8270

Aqueous samples are extracted and extracts are analyzed on GC/MSD.

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 CaCO3)	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, 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.

ETL-NH3-UNION-CLI-WT	Water	Un-ionized ammonia	CALCULATION

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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.

Reference Information

** 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: L1883694 Report Date: 02-FEB-17

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 R3644465								
WG2471622-2 LCS								
2,3,6-Trichlorophenol			91.4		%		50-130	01-FEB-17
WG2471622-3 LCSD		**WG2471622-2**						
2,3,6-Trichlorophenol		91.4	97.2		%	6.2	50	01-FEB-17
WG2471622-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	01-FEB-17
Surrogate: 2,4,6-Tribromophenol			86.6		%		40-150	01-FEB-17
625-WT	**Water**							
Batch R3644328								
WG2471622-2 LCS								
1-Methylnaphthalene			97.3		%		50-140	01-FEB-17
1,2-Dichlorobenzene			78.3		%		40-130	01-FEB-17
1,2,4-Trichlorobenzene			79.2		%		40-130	01-FEB-17
1,3-Dichlorobenzene			76.6		%		50-140	01-FEB-17
1,4-Dichlorobenzene			76.3		%		40-130	01-FEB-17
2-Chlorophenol			88.8		%		50-140	01-FEB-17
2-Methylnaphthalene			88.2		%		50-140	01-FEB-17
2,3,4,5-Tetrachlorophenol			108.8		%		50-140	01-FEB-17
2,3,4,6-Tetrachlorophenol			111.8		%		50-140	01-FEB-17
2,4-Dichlorophenol			101.7		%		50-140	01-FEB-17
2,4-Dimethylphenol			81.7		%		50-140	01-FEB-17
2,4-Dinitrophenol			120.1		%		40-140	01-FEB-17
2,4-Dinitrotoluene			124.0		%		50-140	01-FEB-17
2,4,5-Trichlorophenol			106.2		%		50-140	01-FEB-17
2,4,6-Trichlorophenol			106.8		%		50-140	01-FEB-17
2,6-Dinitrotoluene			112.5		%		50-140	01-FEB-17
3,3'-Dichlorobenzidine			85.0		%		50-140	01-FEB-17
4-Chloroaniline			43.8		%		30-140	01-FEB-17
Acenaphthene			92.0		%		50-140	01-FEB-17
Acenaphthylene			94.7		%		50-140	01-FEB-17
Anthracene			101.5		%		50-140	01-FEB-17
Benzo(a)anthracene			97.4		%		50-140	01-FEB-17
Benzo(a)pyrene			91.9		%		60-130	01-FEB-17
Benzo(b)fluoranthene			107.1		%		50-140	01-FEB-17
Benzo(ghi)perylene			105.5		%		50-140	01-FEB-17

Quality Control Report

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 R3644328								
WG2471622-2 LCS								
Benzo(k)fluoranthene			83.6		%		50-140	01-FEB-17
Bis(2-chloroethyl)ether			98.3		%		50-140	01-FEB-17
Bis(2-ethylhexyl)phthalate			97.0		%		50-140	01-FEB-17
Chrysene			105.2		%		50-140	01-FEB-17
Dibenzo(a,h)anthracene			104.9		%		50-140	01-FEB-17
Diethylphthalate			94.1		%		50-140	01-FEB-17
Dimethylphthalate			92.2		%		50-140	01-FEB-17
Fluoranthene			93.4		%		50-140	01-FEB-17
Fluorene			101.7		%		50-140	01-FEB-17
Hexachlorobenzene			99.3		%		40-130	01-FEB-17
Hexachlorobutadiene			69.3		%		40-130	01-FEB-17
Indeno(1,2,3-cd)pyrene			104.0		%		50-140	01-FEB-17
Naphthalene			87.0		%		50-140	01-FEB-17
Pentachlorophenol			116.5		%		50-140	01-FEB-17
Perylene			107.4		%		50-140	01-FEB-17
Phenanthrene			103.4		%		50-140	01-FEB-17
Pyrene			96.7		%		50-140	01-FEB-17
WG2471622-3 LCSD		**WG2471622-2**						
1-Methylnaphthalene		97.3	95.9		%	1.4	50	01-FEB-17
1,2-Dichlorobenzene		78.3	78.9		%	0.8	50	01-FEB-17
1,2,4-Trichlorobenzene		79.2	77.9		%	1.7	50	01-FEB-17
1,3-Dichlorobenzene		76.6	78.4		%	2.3	50	01-FEB-17
1,4-Dichlorobenzene		76.3	76.8		%	0.6	50	01-FEB-17
2-Chlorophenol		88.8	86.6		%	2.5	50	01-FEB-17
2-Methylnaphthalene		88.2	85.6		%	3.0	50	01-FEB-17
2,3,4,5-Tetrachlorophenol		108.8	103.7		%	4.7	50	01-FEB-17
2,3,4,6-Tetrachlorophenol		111.8	108.1		%	3.4	50	01-FEB-17
2,4-Dichlorophenol		101.7	97.7		%	4.0	50	01-FEB-17
2,4-Dimethylphenol		81.7	74.0		%	9.9	50	01-FEB-17
2,4-Dinitrophenol		120.1	108.4		%	10	50	01-FEB-17
2,4-Dinitrotoluene		124.0	125.7		%	1.3	50	01-FEB-17
2,4,5-Trichlorophenol		106.2	104.1		%	1.9	50	01-FEB-17
2,4,6-Trichlorophenol		106.8	102.4		%	4.2	50	01-FEB-17

Quality Control Report

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 R3644328								
WG2471622-3 LCSD		**WG2471622-2**						
2,6-Dinitrotoluene		112.5	114.8		%	2.0	50	01-FEB-17
3,3'-Dichlorobenzidine		85.0	75.6		%	12	50	01-FEB-17
4-Chloroaniline		43.8	36.8		%	17	50	01-FEB-17
Acenaphthene		92.0	89.2		%	3.1	50	01-FEB-17
Acenaphthylene		94.7	93.2		%	1.6	50	01-FEB-17
Anthracene		101.5	97.0		%	4.6	50	01-FEB-17
Benzo(a)anthracene		97.4	97.3		%	0.2	50	01-FEB-17
Benzo(a)pyrene		91.9	93.6		%	1.8	50	01-FEB-17
Benzo(b)fluoranthene		107.1	106.3		%	0.8	50	01-FEB-17
Benzo(ghi)perylene		105.5	111.5		%	5.5	50	01-FEB-17
Benzo(k)fluoranthene		83.6	89.1		%	6.4	50	01-FEB-17
Bis(2-chloroethyl)ether		98.3	94.8		%	3.6	50	01-FEB-17
Bis(2-ethylhexyl)phthalate		97.0	101.0		%	4.0	50	01-FEB-17
Chrysene		105.2	102.8		%	2.3	50	01-FEB-17
Dibenzo(a,h)anthracene		104.9	106.5		%	1.4	50	01-FEB-17
Diethylphthalate		94.1	93.5		%	0.6	50	01-FEB-17
Dimethylphthalate		92.2	89.6		%	2.9	50	01-FEB-17
Fluoranthene		93.4	95.0		%	1.8	50	01-FEB-17
Fluorene		101.7	98.1		%	3.5	50	01-FEB-17
Hexachlorobenzene		99.3	96.6		%	2.7	50	01-FEB-17
Hexachlorobutadiene		69.3	68.5		%	1.1	50	01-FEB-17
Indeno(1,2,3-cd)pyrene		104.0	105.5		%	1.4	50	01-FEB-17
Naphthalene		87.0	85.1		%	2.3	50	01-FEB-17
Pentachlorophenol		116.5	110.3		%	5.5	50	01-FEB-17
Perylene		107.4	105.0		%	2.2	50	01-FEB-17
Phenanthrene		103.4	99.3		%	4.0	50	01-FEB-17
Pyrene		96.7	101.1		%	4.5	50	01-FEB-17
WG2471622-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	01-FEB-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	01-FEB-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	01-FEB-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	01-FEB-17
1,4-Dichlorobenzene			<0.40		ug/L		0.4	01-FEB-17

Quality Control Report

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 R3644328								
WG2471622-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	01-FEB-17
2-Methylnaphthalene			<0.40		ug/L		0.4	01-FEB-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	01-FEB-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	01-FEB-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	01-FEB-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	01-FEB-17
2,4-Dinitrophenol			<1.0		ug/L		1	01-FEB-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	01-FEB-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	01-FEB-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	01-FEB-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	01-FEB-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	01-FEB-17
4-Chloroaniline			<0.40		ug/L		0.4	01-FEB-17
Acenaphthene			<0.20		ug/L		0.2	01-FEB-17
Acenaphthylene			<0.20		ug/L		0.2	01-FEB-17
Anthracene			<0.20		ug/L		0.2	01-FEB-17
Benzo(a)anthracene			<0.20		ug/L		0.2	01-FEB-17
Benzo(a)pyrene			<0.050		ug/L		0.05	01-FEB-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	01-FEB-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	01-FEB-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	01-FEB-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	01-FEB-17
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	01-FEB-17
Chrysene			<0.20		ug/L		0.2	01-FEB-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	01-FEB-17
Diethylphthalate			<0.20		ug/L		0.2	01-FEB-17
Dimethylphthalate			<0.20		ug/L		0.2	01-FEB-17
Fluoranthene			<0.20		ug/L		0.2	01-FEB-17
Fluorene			<0.20		ug/L		0.2	01-FEB-17
Hexachlorobenzene			<0.040		ug/L		0.04	01-FEB-17
Hexachlorobutadiene			<0.20		ug/L		0.2	01-FEB-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	01-FEB-17
Naphthalene			<0.20		ug/L		0.2	01-FEB-17

Quality Control Report

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 R3644328								
WG2471622-1 MB								
Pentachlorophenol			<0.50		ug/L		0.5	01-FEB-17
Perylene			<0.20		ug/L		0.2	01-FEB-17
Phenanthrene			<0.20		ug/L		0.2	01-FEB-17
Pyrene			<0.20		ug/L		0.2	01-FEB-17
Surrogate: 2-Fluorobiphenyl			98.4		%		40-130	01-FEB-17
Surrogate: Nitrobenzene d5			95.5		%		50-130	01-FEB-17
Surrogate: p-Terphenyl d14			110.0		%		40-130	01-FEB-17
ALK-WT	**Water**							
Batch R3640707								
WG2470400-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			94.4		%		80-120	26-JAN-17
WG2470400-4 DUP		**L1883482-3**						
Alkalinity, Total (as CaCO3)		29	31		mg/L	6.6	20	26-JAN-17
WG2470400-2 LCS								
Alkalinity, Total (as CaCO3)			98.7		%		85-115	26-JAN-17
WG2470400-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	26-JAN-17
BR-IC-N-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-JAN-17
WG2471085-7 LCS								
Bromide (Br)			99.5		%		85-115	27-JAN-17
WG2471085-6 MB								
Bromide (Br)			<0.10		mg/L		0.1	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Bromide (Br)			81.9		%		75-125	27-JAN-17
C-DIS-ORG-WT	**Water**							
Batch R3643113								
WG2471578-3 DUP		**L1883694-1**						
Dissolved Organic Carbon		4.3	4.2		mg/L	0.8	20	29-JAN-17
WG2471578-2 LCS								
Dissolved Organic Carbon			95.5		%		80-120	29-JAN-17
WG2471578-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	29-JAN-17
WG2471578-4 MS		**L1883694-1**						

Quality Control Report

Client: GHD Limited (Waterloo)
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 R3643113								
WG2471578-4 MS		**L1883694-1**						
Dissolved Organic Carbon			98.8		%		70-130	29-JAN-17
CL-IC-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Chloride (Cl)		9.85	9.84		mg/L	0.1	25	27-JAN-17
WG2471085-7 LCS								
Chloride (Cl)			99.0		%		70-130	27-JAN-17
WG2471085-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Chloride (Cl)			97.7		%		70-130	27-JAN-17
CN-TOT-WT	**Water**							
Batch R3642867								
WG2471002-3 DUP		**L1883657-1**						
Cyanide, Total		0.0428	0.0424		mg/L	0.9	20	27-JAN-17
WG2471002-2 LCS								
Cyanide, Total			91.0		%		80-120	27-JAN-17
WG2471002-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	27-JAN-17
WG2471002-4 MS		**L1883657-1**						
Cyanide, Total			86.6		%		70-130	27-JAN-17
COD-T-WT	**Water**							
Batch R3643940								
WG2472799-3 DUP		**L1883685-1**						
COD		14	13		mg/L	6.0	20	31-JAN-17
WG2472799-2 LCS								
COD			106.3		%		85-115	31-JAN-17
WG2472799-1 MB								
COD			<10		mg/L		10	31-JAN-17
WG2472799-4 MS		**L1883685-1**						
COD			96.2		%		75-125	31-JAN-17
CR-CR6-IC-WT	**Water**							

Quality Control Report

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 R3642473								
WG2470869-4 DUP		**WG2470869-3**						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JAN-17
WG2470869-2 LCS								
Chromium, Hexavalent			102.5		%		80-120	27-JAN-17
WG2470869-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	27-JAN-17
WG2470869-5 MS		**WG2470869-3**						
Chromium, Hexavalent			99.9		%		70-130	27-JAN-17
EC-WT	**Water**							
Batch R3641414								
WG2470830-3 DUP		**WG2470830-2**						
Conductivity		429	431		umhos/cm	0.5	10	27-JAN-17
WG2470830-1 LCS								
Conductivity			100.4		%		90-110	27-JAN-17
WG2470830-4 MB								
Conductivity			<3.0		umhos/cm		3	27-JAN-17
F-IC-N-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Fluoride (F)		0.163	0.163		mg/L	0.1	20	27-JAN-17
WG2471085-7 LCS								
Fluoride (F)			99.1		%		90-110	27-JAN-17
WG2471085-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Fluoride (F)			101.4		%		75-125	27-JAN-17
HG-T-CVAA-WT	**Water**							
Batch R3641449								
WG2470735-3 DUP		**L1883907-1**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-17
WG2470735-2 LCS								
Mercury (Hg)-Total			101.0		%		80-120	27-JAN-17
WG2470735-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	27-JAN-17
WG2470735-4 MS		**L1883694-1**						
Mercury (Hg)-Total			99.2		%		70-130	27-JAN-17
MET-T-CCMS-WT	**Water**							

Quality Control Report

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 R3641273								
WG2470379-4 DUP		**WG2470379-3**						
Aluminum (Al)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-JAN-17
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-17
Arsenic (As)-Total		0.00015	0.00016		mg/L	3.0	20	26-JAN-17
Barium (Ba)-Total		0.110	0.117		mg/L	6.2	20	26-JAN-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-JAN-17
Boron (B)-Total		0.027	0.029		mg/L	5.9	20	26-JAN-17
Cadmium (Cd)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-JAN-17
Calcium (Ca)-Total		140	145		mg/L	3.4	20	26-JAN-17
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-17
Copper (Cu)-Total		0.0019	0.0018		mg/L	2.5	20	26-JAN-17
Iron (Fe)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-JAN-17
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-17
Magnesium (Mg)-Total		23.1	24.6		mg/L	6.1	20	26-JAN-17
Manganese (Mn)-Total		0.0113	0.0135		mg/L	17	20	26-JAN-17
Molybdenum (Mo)-Total		0.000188	0.000191		mg/L	1.9	20	26-JAN-17
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-JAN-17
Potassium (K)-Total		3.66	3.62		mg/L	0.9	20	26-JAN-17
Selenium (Se)-Total		0.000367	0.000376		mg/L	2.5	20	26-JAN-17
Silicon (Si)-Total		4.27	4.41		mg/L	3.2	20	26-JAN-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-JAN-17
Sodium (Na)-Total		384	396		mg/L	2.9	20	26-JAN-17
Strontium (Sr)-Total		0.311	0.327		mg/L	4.9	20	26-JAN-17
Thallium (Tl)-Total		0.000011	0.000011		mg/L	6.0	20	26-JAN-17
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-17
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-JAN-17
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	26-JAN-17
WG2470379-2 LCS								
Aluminum (Al)-Total			95.4		%		80-120	26-JAN-17
Antimony (Sb)-Total			102.0		%		80-120	26-JAN-17
Arsenic (As)-Total			102.3		%		80-120	26-JAN-17
Barium (Ba)-Total			105.2		%		80-120	26-JAN-17
Beryllium (Be)-Total			92.9		%		80-120	26-JAN-17

Quality Control Report

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 R3641273								
WG2470379-2 LCS								
Bismuth (Bi)-Total			100.9		%		80-120	26-JAN-17
Boron (B)-Total			93.0		%		80-120	26-JAN-17
Cadmium (Cd)-Total			99.8		%		80-120	26-JAN-17
Calcium (Ca)-Total			96.6		%		80-120	26-JAN-17
Cobalt (Co)-Total			99.3		%		80-120	26-JAN-17
Copper (Cu)-Total			99.3		%		80-120	26-JAN-17
Iron (Fe)-Total			94.9		%		80-120	26-JAN-17
Lead (Pb)-Total			98.2		%		80-120	26-JAN-17
Magnesium (Mg)-Total			94.8		%		80-120	26-JAN-17
Manganese (Mn)-Total			99.9		%		80-120	26-JAN-17
Molybdenum (Mo)-Total			95.8		%		80-120	26-JAN-17
Nickel (Ni)-Total			98.3		%		80-120	26-JAN-17
Potassium (K)-Total			94.2		%		80-120	26-JAN-17
Selenium (Se)-Total			98.0		%		80-120	26-JAN-17
Silicon (Si)-Total			97.9		%		80-120	26-JAN-17
Silver (Ag)-Total			103.5		%		80-120	26-JAN-17
Sodium (Na)-Total			93.7		%		80-120	26-JAN-17
Strontium (Sr)-Total			99.5		%		80-120	26-JAN-17
Thallium (Tl)-Total			98.4		%		80-120	26-JAN-17
Tin (Sn)-Total			100.3		%		80-120	26-JAN-17
Vanadium (V)-Total			101.2		%		80-120	26-JAN-17
Zinc (Zn)-Total			93.4		%		80-120	26-JAN-17
WG2470379-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	26-JAN-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	26-JAN-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-JAN-17
Boron (B)-Total			<0.010		mg/L		0.01	26-JAN-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	26-JAN-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	26-JAN-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	26-JAN-17

Quality Control Report

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 R3641273								
WG2470379-1 MB								
Iron (Fe)-Total			<0.050		mg/L		0.05	26-JAN-17
Lead (Pb)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	26-JAN-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	26-JAN-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-JAN-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-JAN-17
Potassium (K)-Total			<0.050		mg/L		0.05	26-JAN-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-JAN-17
Silicon (Si)-Total			<0.050		mg/L		0.05	26-JAN-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	26-JAN-17
Sodium (Na)-Total			<0.50		mg/L		0.5	26-JAN-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	26-JAN-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-JAN-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-JAN-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-JAN-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-JAN-17
WG2470379-5 MS		**WG2470379-3**						
Aluminum (Al)-Total			96.5		%		70-130	26-JAN-17
Antimony (Sb)-Total			99.6		%		70-130	26-JAN-17
Arsenic (As)-Total			98.6		%		70-130	26-JAN-17
Barium (Ba)-Total			N/A	MS-B	%		-	26-JAN-17
Beryllium (Be)-Total			97.0		%		70-130	26-JAN-17
Bismuth (Bi)-Total			87.8		%		70-130	26-JAN-17
Boron (B)-Total			100.4		%		70-130	26-JAN-17
Cadmium (Cd)-Total			89.0		%		70-130	26-JAN-17
Calcium (Ca)-Total			N/A	MS-B	%		-	26-JAN-17
Cobalt (Co)-Total			94.0		%		70-130	26-JAN-17
Copper (Cu)-Total			89.9		%		70-130	26-JAN-17
Iron (Fe)-Total			90.1		%		70-130	26-JAN-17
Lead (Pb)-Total			87.7		%		70-130	26-JAN-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	26-JAN-17
Manganese (Mn)-Total			105.0		%		70-130	26-JAN-17
Molybdenum (Mo)-Total			99.5		%		70-130	26-JAN-17
Nickel (Ni)-Total			89.7		%		70-130	26-JAN-17

Quality Control Report

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 R3641273								
WG2470379-5 MS		**WG2470379-3**						
Potassium (K)-Total			N/A	MS-B	%		-	26-JAN-17
Selenium (Se)-Total			90.3		%		70-130	26-JAN-17
Silicon (Si)-Total			N/A	MS-B	%		-	26-JAN-17
Silver (Ag)-Total			90.4		%		70-130	26-JAN-17
Sodium (Na)-Total			N/A	MS-B	%		-	26-JAN-17
Strontium (Sr)-Total			N/A	MS-B	%		-	26-JAN-17
Thallium (Tl)-Total			89.9		%		70-130	26-JAN-17
Tin (Sn)-Total			96.4		%		70-130	26-JAN-17
Vanadium (V)-Total			100.1		%		70-130	26-JAN-17
Zinc (Zn)-Total			89.3		%		70-130	26-JAN-17
NH3-WT	**Water**							
Batch R3641495								
WG2470241-12 DUP		**L1883217-1**						
Ammonia, Total (as N)		2.64	2.74		mg/L	3.7	20	26-JAN-17
WG2470241-7 DUP		**L1883673-1**						
Ammonia, Total (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	26-JAN-17
WG2470241-10 LCS								
Ammonia, Total (as N)			94.3		%		85-115	26-JAN-17
WG2470241-6 LCS								
Ammonia, Total (as N)			96.2		%		85-115	26-JAN-17
WG2470241-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	26-JAN-17
WG2470241-9 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	26-JAN-17
WG2470241-11 MS		**L1883217-1**						
Ammonia, Total (as N)			N/A	MS-B	%		-	26-JAN-17
WG2470241-8 MS		**L1883673-1**						
Ammonia, Total (as N)			88.5		%		75-125	26-JAN-17
Batch R3642913								
WG2471685-7 DUP		**L1884511-4**						
Ammonia, Total (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	30-JAN-17
WG2471685-6 LCS								
Ammonia, Total (as N)			97.9		%		85-115	30-JAN-17
WG2471685-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	30-JAN-17
WG2471685-8 MS		**L1884511-4**						

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R3642913								
WG2471685-8 MS		**L1884511-4**						
Ammonia, Total (as N)			93.0		%		75-125	30-JAN-17
Batch R3644996								
WG2472941-3 DUP		**L1885083-1**						
Ammonia, Total (as N)		<0.040	<0.040	RPD-NA	mg/L	N/A	20	01-FEB-17
WG2472941-2 LCS								
Ammonia, Total (as N)			97.4		%		85-115	01-FEB-17
WG2472941-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	01-FEB-17
WG2472941-4 MS		**L1885083-1**						
Ammonia, Total (as N)			83.2		%		75-125	01-FEB-17
NO2-IC-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	27-JAN-17
WG2471085-7 LCS								
Nitrite (as N)			99.5		%		70-130	27-JAN-17
WG2471085-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Nitrite (as N)			98.7		%		70-130	27-JAN-17
NO3-IC-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Nitrate (as N)		0.160	0.158		mg/L	1.1	25	27-JAN-17
WG2471085-7 LCS								
Nitrate (as N)			99.2		%		70-130	27-JAN-17
WG2471085-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Nitrate (as N)			98.1		%		70-130	27-JAN-17
P-T-COL-WT	**Water**							
Batch R3640936								
WG2470296-3 DUP		**L1883685-1**						
Phosphorus, Total		0.258	0.264		mg/L	2.0	20	26-JAN-17
WG2470296-2 LCS								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WT	**Water**							
Batch R3640936								
WG2470296-2 LCS								
Phosphorus, Total			102.3		%		80-120	26-JAN-17
WG2470296-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	26-JAN-17
WG2470296-4 MS		**L1883685-1**						
Phosphorus, Total			N/A	MS-B	%		-	26-JAN-17
PH-WT	**Water**							
Batch R3641414								
WG2470830-3 DUP		**WG2470830-2**						
pH		7.78	7.77	J	pH units	0.00	0.2	27-JAN-17
WG2470830-1 LCS								
pH			6.96		pH units		6.9-7.1	27-JAN-17
PHENOLS-4AAP-WT	**Water**							
Batch R3642968								
WG2471197-3 DUP		**L1882831-1**						
Phenols (4AAP)		0.0190	0.0194		mg/L	2.3	20	27-JAN-17
WG2471197-2 LCS								
Phenols (4AAP)			105.5		%		85-115	27-JAN-17
WG2471197-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	27-JAN-17
WG2471197-4 MS		**L1882831-1**						
Phenols (4AAP)			95.8		%		75-125	27-JAN-17
SO4-IC-N-WT	**Water**							
Batch R3642905								
WG2471085-9 DUP		**L1883694-2**						
Sulfate (SO4)		24.7	24.6		mg/L	0.4	20	27-JAN-17
WG2471085-7 LCS								
Sulfate (SO4)			99.8		%		90-110	27-JAN-17
WG2471085-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-JAN-17
WG2471085-10 MS		**L1883694-2**						
Sulfate (SO4)			96.6		%		75-125	27-JAN-17
SOLIDS-TDS-WT	**Water**							
Batch R3643765								
WG2471498-3 DUP		**L1883694-1**						
Total Dissolved Solids		447	446		mg/L	0.2	20	29-JAN-17
WG2471498-2 LCS								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT	**Water**							
Batch R3643765								
WG2471498-2 LCS								
Total Dissolved Solids			97.4		%		85-115	29-JAN-17
WG2471498-1 MB								
Total Dissolved Solids			<10		mg/L		10	29-JAN-17
SOLIDS-TSS-WT	**Water**							
Batch R3644162								
WG2472291-3 DUP		**L1883651-1**						
Total Suspended Solids		117	110		mg/L	6.2	20	01-FEB-17
WG2472291-2 LCS								
Total Suspended Solids			100.2		%		85-115	01-FEB-17
WG2472291-1 MB								
Total Suspended Solids			<2.0		mg/L		2	01-FEB-17
Batch R3644173								
WG2472294-3 DUP		**L1883956-2**						
Total Suspended Solids		2600	2580		mg/L	0.8	20	01-FEB-17
WG2472294-2 LCS								
Total Suspended Solids			98.8		%		85-115	01-FEB-17
WG2472294-1 MB								
Total Suspended Solids			<2.0		mg/L		2	01-FEB-17
TKN-WT	**Water**							
Batch R3643054								
WG2471661-3 DUP		**L1883694-3**						
Total Kjeldahl Nitrogen		4.93	5.22		mg/L	5.8	20	30-JAN-17
WG2471661-2 LCS								
Total Kjeldahl Nitrogen			87.9		%		75-125	30-JAN-17
WG2471661-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	30-JAN-17
WG2471661-4 MS		**L1883694-3**						
Total Kjeldahl Nitrogen			119.0		%		70-130	30-JAN-17
Batch R3644508								
WG2473141-3 DUP		**L1884168-1**						
Total Kjeldahl Nitrogen		2.24	2.04		mg/L	9.5	20	01-FEB-17
WG2473141-2 LCS								
Total Kjeldahl Nitrogen			111.8		%		75-125	01-FEB-17
WG2473141-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	01-FEB-17
WG2473141-4 MS		**L1884168-1**						

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT	**Water**							
Batch R3644508								
WG2473141-4 MS		**L1884168-1**						
Total Kjeldahl Nitrogen			85.5		%		70-130	01-FEB-17
VOC-ROU-HS-WT	**Water**							
Batch R3641215								
WG2469961-4 DUP		**WG2469961-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	27-JAN-17
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	27-JAN-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17

Quality Control Report

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 R3641215								
WG2469961-4 DUP		**WG2469961-3**						
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-JAN-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-JAN-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-JAN-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-JAN-17
WG2469961-1 LCS								
1,1,1,2-Tetrachloroethane			96.2		%		70-130	27-JAN-17
1,1,2,2-Tetrachloroethane			97.5		%		70-130	27-JAN-17
1,1,1-Trichloroethane			104.7		%		70-130	27-JAN-17
1,1,2-Trichloroethane			96.4		%		70-130	27-JAN-17
1,2-Dibromoethane			101.1		%		70-130	27-JAN-17
1,1-Dichloroethane			111.3		%		70-130	27-JAN-17
1,1-Dichloroethylene			102.2		%		70-130	27-JAN-17
1,2-Dichlorobenzene			102.0		%		70-130	27-JAN-17
1,2-Dichloroethane			101.2		%		70-130	27-JAN-17
1,2-Dichloropropane			100.6		%		70-130	27-JAN-17
1,3-Dichlorobenzene			102.9		%		70-130	27-JAN-17
1,4-Dichlorobenzene			105.7		%		70-130	27-JAN-17
Acetone			112.0		%		60-140	27-JAN-17
Benzene			103.3		%		70-130	27-JAN-17
Bromodichloromethane			98.3		%		70-130	27-JAN-17
Bromoform			97.4		%		70-130	27-JAN-17
Bromomethane			110.5		%		60-140	27-JAN-17
Carbon tetrachloride			103.4		%		70-130	27-JAN-17
Chlorobenzene			101.7		%		70-130	27-JAN-17

Quality Control Report

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 R3641215								
WG2469961-1 LCS								
Chloroethane			109.1		%		70-130	27-JAN-17
Chloroform			103.8		%		70-130	27-JAN-17
cis-1,2-Dichloroethylene			102.9		%		70-130	27-JAN-17
cis-1,3-Dichloropropene			96.8		%		70-130	27-JAN-17
Dibromochloromethane			98.7		%		70-130	27-JAN-17
Dichlorodifluoromethane			125.0		%		50-140	27-JAN-17
Dichloromethane			102.5		%		70-130	27-JAN-17
Ethylbenzene			100.3		%		70-130	27-JAN-17
m+p-Xylenes			103.1		%		70-130	27-JAN-17
Methyl Ethyl Ketone			109.0		%		60-140	27-JAN-17
Methyl Isobutyl Ketone			107.9		%		50-150	27-JAN-17
n-Hexane			103.6		%		70-130	27-JAN-17
MTBE			102.2		%		70-130	27-JAN-17
o-Xylene			100.5		%		70-130	27-JAN-17
Styrene			96.7		%		70-130	27-JAN-17
Tetrachloroethylene			100.9		%		70-130	27-JAN-17
Toluene			100.7		%		70-130	27-JAN-17
trans-1,2-Dichloroethylene			104.3		%		70-130	27-JAN-17
trans-1,3-Dichloropropene			91.7		%		70-130	27-JAN-17
Trichloroethylene			103.4		%		70-130	27-JAN-17
Trichlorofluoromethane			117.8		%		60-140	27-JAN-17
Vinyl chloride			108.9		%		60-140	27-JAN-17
WG2469961-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	27-JAN-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	27-JAN-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	27-JAN-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	27-JAN-17
1,2-Dibromoethane			<0.20		ug/L		0.2	27-JAN-17
1,1-Dichloroethane			<0.50		ug/L		0.5	27-JAN-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	27-JAN-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	27-JAN-17
1,2-Dichloroethane			<0.50		ug/L		0.5	27-JAN-17
1,2-Dichloropropane			<0.50		ug/L		0.5	27-JAN-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	27-JAN-17

Quality Control Report

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 R3641215								
WG2469961-2 MB								
1,4-Dichlorobenzene			<0.50		ug/L		0.5	27-JAN-17
Acetone			<20		ug/L		20	27-JAN-17
Benzene			<0.50		ug/L		0.5	27-JAN-17
Bromodichloromethane			<1.0		ug/L		1	27-JAN-17
Bromoform			<1.0		ug/L		1	27-JAN-17
Bromomethane			<0.50		ug/L		0.5	27-JAN-17
Carbon tetrachloride			<0.50		ug/L		0.5	27-JAN-17
Chlorobenzene			<0.50		ug/L		0.5	27-JAN-17
Chloroethane			<1.0		ug/L		1	27-JAN-17
Chloroform			<1.0		ug/L		1	27-JAN-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-JAN-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	27-JAN-17
Dibromochloromethane			<1.0		ug/L		1	27-JAN-17
Dichlorodifluoromethane			<1.0		ug/L		1	27-JAN-17
Dichloromethane			<2.0		ug/L		2	27-JAN-17
Ethylbenzene			<0.50		ug/L		0.5	27-JAN-17
m+p-Xylenes			<1.0		ug/L		1	27-JAN-17
Methyl Ethyl Ketone			<20		ug/L		20	27-JAN-17
Methyl Isobutyl Ketone			<20		ug/L		20	27-JAN-17
n-Hexane			<0.50		ug/L		0.5	27-JAN-17
MTBE			<0.50		ug/L		0.5	27-JAN-17
o-Xylene			<0.50		ug/L		0.5	27-JAN-17
Styrene			<0.50		ug/L		0.5	27-JAN-17
Tetrachloroethylene			<0.50		ug/L		0.5	27-JAN-17
Toluene			<0.50		ug/L		0.5	27-JAN-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-JAN-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	27-JAN-17
Trichloroethylene			<0.50		ug/L		0.5	27-JAN-17
Trichlorofluoromethane			<1.0		ug/L		1	27-JAN-17
Vinyl chloride			<0.50		ug/L		0.5	27-JAN-17
Surrogate: 1,4-Difluorobenzene			107.5		%		70-130	27-JAN-17
Surrogate: 4-Bromofluorobenzene			105.4		%		70-130	27-JAN-17

Quality Control Report

Workorder: L1883694 Report Date: 02-FEB-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1883694-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791	Report Format / Distri
Company:	GHD LIMITED		Select Report Format: ☑PDF ☑EXCEL ☑EDD (DIGITAL)
Contact:	Jennifer Balkwill		Quality Control (QC) Report with Report ☑ Yes ☐ No
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2		☐Criteria on Report - provide details below if box checked
Phone:	519-884-0510		Select Distribution: ☑EMAIL ☐MAIL ☐FAX
			Email 1 or Fax Jennifer.Balkwill@ghd.com
			Email 2 See PO

Turnaround Time (TAT) is not available for all tests)

- R ☐Regular (Standard TAT if received by 3 pm - business days)
- P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☑EMAIL ☐MAIL ☑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): L1883694 26A

ALS Contact: L.Ermeta Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-8-WT)	DOC (C-DIS-ORG-WT), COD, TKN, TP	Total CN (CN-TOT-WT)	Un-Ionized NH3 (ETL-NH3-UNION-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
1	EQ POND	25/01/17	11:00	water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		3	7.37	
2	East Retention Pond	25/01/17	12:00	water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		2	6.81	
3	West Retention Pond	25/01/17	11:30	water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		3	6.64	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☑ No ☐ Custody seal intact Yes ☑ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			7.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: R Tobin	Date: Jan 25/17	Time: 14:30	Received by:	Date:	Time:	Received by:	Date: 26/1/17	Time: 8:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-RM-0329a v08 Front/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: 26-JAN-17
Report Date: 31-JAN-17 08:31 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1883923

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1883923-1 EQ POND Sampled By: CLIENT on 25-JAN-17 @ 11:00 Matrix: WATER							
Microtox Physical Tests							
Turbidity	N/A				28-JAN-17	28-JAN-17	R3641783
Colour	Colourless				28-JAN-17	28-JAN-17	R3641783
Clarification	None				28-JAN-17	28-JAN-17	R3641783
Initial pH	7.9		0.10	pH	28-JAN-17	28-JAN-17	R3641783
Final pH	7.9		0.10	pH	28-JAN-17	28-JAN-17	R3641783
Lab Treatment	None				28-JAN-17	28-JAN-17	R3641783
Microtox Original							
EC50 (15min) Original	>100		1.0	%	28-JAN-17	28-JAN-17	R3641783
EC20 (15min) Original	>100		1.0	%	28-JAN-17	28-JAN-17	R3641783
EC50 (5min) Original	>100		1.0	%	28-JAN-17	28-JAN-17	R3641783
EC20 (5min) Original	>100		1.0	%	28-JAN-17	28-JAN-17	R3641783
Interpretation Original	NON TOXIC				28-JAN-17	28-JAN-17	R3641783

* 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-ED	Water	Microtox Original	WCMUC (1991)
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-ED	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
ED	ALS ENVIRONMENTAL - EDMONTON, 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: L1883923 Report Date: 31-JAN-17

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-ED	**Water**							
Batch R3641783								
WG2471275-2 CRM		**PHENOL_ED**						
EC50 (5min) Original			18.7		mg/L		13-26	28-JAN-17
WG2471275-3 CRM		**PHENOL_ED**						
EC50 (5min) Original			15.4		mg/L		13-26	28-JAN-17
WG2471275-4 DUP		**L1883923-1**						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		28-JAN-17
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		28-JAN-17
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		28-JAN-17
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		28-JAN-17
WG2471275-1 MB								
EC50 (15min) Original			PASS					28-JAN-17
EC20 (15min) Original			PASS					28-JAN-17
EC50 (5min) Original			PASS					28-JAN-17
EC20 (5min) Original			PASS					28-JAN-17

Quality Control Report

Workorder: L1883923 Report Date: 31-JAN-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1883923-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-7780	

Report Format / Distrib	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Turnaround Time (TAT) is not available for all tests)

- R ☒ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☑ 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: L.Ermeta

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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
	EQ POND	25/01/17	11:00	water	✓			2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ Yes ☑ No

Are samples for human drinking water use?
☐ Yes ☐ 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		SIF Observations	Yes ☐	No ☑
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☑			

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
4					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: R Tobin	Date: Jan 25/17	Time: 13:00	Received by:	Date: 1/26	Time: 12:14	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS FAM-03294 v08 Front/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: 22-FEB-17
Report Date: 28-FEB-17 15:15 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1893052

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893052-1 EQ POND Sampled By: CLIENT on 21-FEB-17 @ 10:45 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.60		0.10	pH		24-FEB-17	R3660591
Temperature, Client	4.0		-50	Deg. C		24-FEB-17	R3660591
Physical Tests							
Conductivity	777		3.0	umhos/cm		22-FEB-17	R3659749
Hardness (as CaCO3)	303	HTC	10	mg/L		23-FEB-17	
pH	7.87		0.10	pH units		22-FEB-17	R3659749
Total Suspended Solids	7.4		2.0	mg/L	25-FEB-17	26-FEB-17	R3662117
Total Dissolved Solids	527	DLDS	20	mg/L		23-FEB-17	R3662198
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	158		10	mg/L		22-FEB-17	R3659659
Unionized ammonia	0.0178		0.00055	mg/L		28-FEB-17	
Ammonia, Total (as N)	3.21	DLHC	0.10	mg/L		23-FEB-17	R3659839
Bromide (Br)	0.55		0.10	mg/L		23-FEB-17	R3661216
Chloride (Cl)	60.9		0.50	mg/L		23-FEB-17	R3661216
Fluoride (F)	0.546		0.020	mg/L		23-FEB-17	R3661216
Nitrate (as N)	0.471		0.020	mg/L		23-FEB-17	R3661216
Nitrite (as N)	0.017		0.010	mg/L		23-FEB-17	R3661216
Total Kjeldahl Nitrogen	3.33		0.15	mg/L	24-FEB-17	24-FEB-17	R3661283
Phosphorus, Total	0.0241		0.0030	mg/L	24-FEB-17	26-FEB-17	R3661944
Sulfate (SO4)	165		0.30	mg/L		23-FEB-17	R3661216
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-FEB-17	R3659737
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.1		1.0	mg/L		22-FEB-17	R3660485
Total Metals							
Aluminum (Al)-Total	0.283		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Antimony (Sb)-Total	0.00041		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Arsenic (As)-Total	0.00083		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Barium (Ba)-Total	0.0480		0.00020	mg/L	22-FEB-17	22-FEB-17	R3659537
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Boron (B)-Total	0.098		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Cadmium (Cd)-Total	0.000030		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Calcium (Ca)-Total	85.1		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Cobalt (Co)-Total	0.00031		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Copper (Cu)-Total	0.0013		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Iron (Fe)-Total	0.246		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Lead (Pb)-Total	0.00025		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Magnesium (Mg)-Total	22.0		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Manganese (Mn)-Total	0.0167		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		23-FEB-17	R3660018
Molybdenum (Mo)-Total	0.0374		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537

* 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
L1893052-1 EQ POND Sampled By: CLIENT on 21-FEB-17 @ 10:45 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00310		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Potassium (K)-Total	5.12		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Selenium (Se)-Total	0.00208		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silicon (Si)-Total	2.40		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silver (Ag)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Sodium (Na)-Total	34.7		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Strontium (Sr)-Total	0.675		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Thallium (Tl)-Total	0.000015		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Tin (Sn)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Vanadium (V)-Total	0.00079		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Zinc (Zn)-Total	0.0085		0.0030	mg/L	22-FEB-17	22-FEB-17	R3659537
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-FEB-17	R3659928
Aggregate Organics							
COD	16		10	mg/L		27-FEB-17	R3662496
Phenols (4AAP)	0.0044		0.0010	mg/L		24-FEB-17	R3660746
Volatile Organic Compounds							
Acetone	<20		20	ug/L		23-FEB-17	R3659785
Benzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Bromodichloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromoform	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromomethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Carbon tetrachloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
Chlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dibromochloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroform	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,2-Dibromoethane	<0.20		0.20	ug/L		23-FEB-17	R3659785
1,2-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,3-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,4-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichlorodifluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,1-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,2-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichloromethane	<2.0		2.0	ug/L		23-FEB-17	R3659785
1,2-Dichloropropane	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Ethylbenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785

* 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
L1893052-1 EQ POND Sampled By: CLIENT on 21-FEB-17 @ 10:45 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Methyl Ethyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
Methyl Isobutyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
MTBE	<0.50		0.50	ug/L		23-FEB-17	R3659785
Styrene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Tetrachloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Toluene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,1-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichlorofluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Vinyl chloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
o-Xylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
m+p-Xylenes	<1.0		1.0	ug/L		23-FEB-17	R3659785
Xylenes (Total)	<1.1		1.1	ug/L		23-FEB-17	
Surrogate: 4-Bromofluorobenzene	96.7		70-130	%		23-FEB-17	R3659785
Surrogate: 1,4-Difluorobenzene	104.2		70-130	%		23-FEB-17	R3659785
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		23-FEB-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661368
Surrogate: Phenol d5	38.3		30-130	%	23-FEB-17	24-FEB-17	R3661368
Surrogate: 2,4,6-Tribromophenol	100.5		40-150	%	23-FEB-17	24-FEB-17	R3661368
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Acenaphthylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)pyrene	<0.050		0.050	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
4-Chloroaniline	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Chlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Chrysene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257

* 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
L1893052-1 EQ POND Sampled By: CLIENT on 21-FEB-17 @ 10:45 Matrix: WATER							
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Diethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dimethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-FEB-17	24-FEB-17	R3661257
Fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Fluorene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobenzene	<0.040		0.040	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobutadiene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Naphthalene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Pentachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Phenanthrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Surrogate: 2-Fluorobiphenyl	87.0		40-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: Nitrobenzene d5	89.5		50-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: p-Terphenyl d14	95.3		40-130	%	23-FEB-17	24-FEB-17	R3661257
L1893052-2 WEST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.48		0.10	pH		24-FEB-17	R3660591
Temperature, Client	4.0		-50	Deg. C		24-FEB-17	R3660591
Physical Tests							
Conductivity	98.1		3.0	umhos/cm		22-FEB-17	R3659749
Hardness (as CaCO3)	47	HTC	10	mg/L		23-FEB-17	
pH	7.64		0.10	pH units		22-FEB-17	R3659749
Total Suspended Solids	3.5		2.0	mg/L	25-FEB-17	26-FEB-17	R3662120
Total Dissolved Solids	51	DLDS	13	mg/L		23-FEB-17	R3662198
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
L1893052-2 WEST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:00 Matrix: WATER							
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	29		10	mg/L		22-FEB-17	R3659659
Unionized ammonia	0.0255		0.00084	mg/L		28-FEB-17	
Ammonia, Total (as N)	6.07	DLHC	0.20	mg/L		23-FEB-17	R3659839
Bromide (Br)	<0.10		0.10	mg/L		23-FEB-17	R3661216
Chloride (Cl)	6.43		0.50	mg/L		23-FEB-17	R3661216
Fluoride (F)	0.098		0.020	mg/L		23-FEB-17	R3661216
Nitrate (as N)	<0.020		0.020	mg/L		23-FEB-17	R3661216
Nitrite (as N)	<0.010		0.010	mg/L		23-FEB-17	R3661216
Total Kjeldahl Nitrogen	6.46		0.15	mg/L	27-FEB-17	27-FEB-17	R3662329
Phosphorus, Total	0.0153		0.0030	mg/L	24-FEB-17	26-FEB-17	R3661944
Sulfate (SO4)	11.8		0.30	mg/L		23-FEB-17	R3661216
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-FEB-17	R3659737
Organic / Inorganic Carbon							
Dissolved Organic Carbon	1.9		1.0	mg/L		22-FEB-17	R3660485
Total Metals							
Aluminum (Al)-Total	0.047		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Antimony (Sb)-Total	0.00016		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Arsenic (As)-Total	0.00021		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Barium (Ba)-Total	0.00965		0.00020	mg/L	22-FEB-17	22-FEB-17	R3659537
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Boron (B)-Total	0.014		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Cadmium (Cd)-Total	0.000015		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Calcium (Ca)-Total	13.8		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Copper (Cu)-Total	<0.0010		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Iron (Fe)-Total	<0.050		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Lead (Pb)-Total	0.00017		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Magnesium (Mg)-Total	3.00		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Manganese (Mn)-Total	0.0409		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		23-FEB-17	R3660018
Molybdenum (Mo)-Total	0.00436		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Potassium (K)-Total	0.808		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Selenium (Se)-Total	0.000256		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silicon (Si)-Total	0.342		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silver (Ag)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Sodium (Na)-Total	4.39		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Strontium (Sr)-Total	0.0931		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Tin (Sn)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893052-2 WEST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:00 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	22-FEB-17	22-FEB-17	R3659537
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-FEB-17	R3659928
Aggregate Organics							
COD	<10		10	mg/L		27-FEB-17	R3662496
Phenols (4AAP)	0.0040		0.0010	mg/L		24-FEB-17	R3660746
Volatile Organic Compounds							
Acetone	<20		20	ug/L		23-FEB-17	R3659785
Benzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Bromodichloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromoform	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromomethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Carbon tetrachloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
Chlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dibromochloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroform	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,2-Dibromoethane	<0.20		0.20	ug/L		23-FEB-17	R3659785
1,2-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,3-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,4-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichlorodifluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,1-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,2-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichloromethane	<2.0		2.0	ug/L		23-FEB-17	R3659785
1,2-Dichloropropane	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Ethylbenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
n-Hexane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Methyl Ethyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
Methyl Isobutyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
MTBE	<0.50		0.50	ug/L		23-FEB-17	R3659785
Styrene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Tetrachloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Toluene	<0.50		0.50	ug/L		23-FEB-17	R3659785

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893052-2 WEST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:00 Matrix: WATER							
Volatile Organic Compounds							
1,1,1-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichlorofluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Vinyl chloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
o-Xylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
m+p-Xylenes	<1.0		1.0	ug/L		23-FEB-17	R3659785
Xylenes (Total)	<1.1		1.1	ug/L		23-FEB-17	
Surrogate: 4-Bromofluorobenzene	96.0		70-130	%		23-FEB-17	R3659785
Surrogate: 1,4-Difluorobenzene	103.3		70-130	%		23-FEB-17	R3659785
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		23-FEB-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661368
Surrogate: Phenol d5	36.8		30-130	%	23-FEB-17	24-FEB-17	R3661368
Surrogate: 2,4,6-Tribromophenol	97.1		40-150	%	23-FEB-17	24-FEB-17	R3661368
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Acenaphthylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)pyrene	<0.050		0.050	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
4-Chloroaniline	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Chlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Chrysene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Diethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dimethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-FEB-17	24-FEB-17	R3661257

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893052-2 WEST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
Fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Fluorene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobenzene	<0.040		0.040	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobutadiene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Naphthalene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Pentachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Phenanthrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Surrogate: 2-Fluorobiphenyl	90.7		40-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: Nitrobenzene d5	89.7		50-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: p-Terphenyl d14	92.6		40-130	%	23-FEB-17	24-FEB-17	R3661257
L1893052-3 EAST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:15 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.61		0.10	pH		24-FEB-17	R3660591
Temperature, Client	4.0		-50	Deg. C		24-FEB-17	R3660591
Physical Tests							
Conductivity	75.6		3.0	umhos/cm		22-FEB-17	R3659749
Hardness (as CaCO3)	43	HTC	10	mg/L		23-FEB-17	
pH	7.44		0.10	pH units		22-FEB-17	R3659749
Total Suspended Solids	4.9		2.0	mg/L	25-FEB-17	26-FEB-17	R3662120
Total Dissolved Solids	44	DLDS	13	mg/L		23-FEB-17	R3662198
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	23		10	mg/L		22-FEB-17	R3659659
Unionized ammonia	0.00736		0.00023	mg/L		28-FEB-17	
Ammonia, Total (as N)	1.30	DLHC	0.040	mg/L		27-FEB-17	R3662293
Bromide (Br)	<0.10		0.10	mg/L		23-FEB-17	R3661216
Chloride (Cl)	4.14		0.50	mg/L		23-FEB-17	R3661216
Fluoride (F)	0.074		0.020	mg/L		23-FEB-17	R3661216
Nitrate (as N)	<0.020		0.020	mg/L		23-FEB-17	R3661216
Nitrite (as N)	<0.010		0.010	mg/L		23-FEB-17	R3661216
Total Kjeldahl Nitrogen	1.55		0.15	mg/L	27-FEB-17	27-FEB-17	R3662329

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893052-3 EAST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:15 Matrix: WATER							
Anions and Nutrients							
Phosphorus, Total	0.0224		0.0030	mg/L	24-FEB-17	27-FEB-17	R3661944
Sulfate (SO4)	9.89		0.30	mg/L		23-FEB-17	R3661216
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-FEB-17	R3659737
Organic / Inorganic Carbon							
Dissolved Organic Carbon	1.4		1.0	mg/L		22-FEB-17	R3660485
Total Metals							
Aluminum (Al)-Total	0.607		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Antimony (Sb)-Total	0.00017		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Arsenic (As)-Total	0.00035		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Barium (Ba)-Total	0.00936		0.00020	mg/L	22-FEB-17	22-FEB-17	R3659537
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Boron (B)-Total	<0.010		0.010	mg/L	22-FEB-17	22-FEB-17	R3659537
Cadmium (Cd)-Total	0.000058		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Calcium (Ca)-Total	11.6		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Cobalt (Co)-Total	0.00033		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Copper (Cu)-Total	0.0015		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Iron (Fe)-Total	0.506		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Lead (Pb)-Total	0.00212		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Magnesium (Mg)-Total	3.44		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Manganese (Mn)-Total	0.0218		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		23-FEB-17	R3660018
Molybdenum (Mo)-Total	0.00457		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Nickel (Ni)-Total	0.00116		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Potassium (K)-Total	0.947		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Selenium (Se)-Total	0.000429		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silicon (Si)-Total	1.46		0.050	mg/L	22-FEB-17	22-FEB-17	R3659537
Silver (Ag)-Total	<0.000050		0.000050	mg/L	22-FEB-17	22-FEB-17	R3659537
Sodium (Na)-Total	3.56		0.50	mg/L	22-FEB-17	22-FEB-17	R3659537
Strontium (Sr)-Total	0.0748		0.0010	mg/L	22-FEB-17	22-FEB-17	R3659537
Thallium (Tl)-Total	0.000019		0.000010	mg/L	22-FEB-17	22-FEB-17	R3659537
Tin (Sn)-Total	0.00017		0.00010	mg/L	22-FEB-17	22-FEB-17	R3659537
Vanadium (V)-Total	0.00155		0.00050	mg/L	22-FEB-17	22-FEB-17	R3659537
Zinc (Zn)-Total	0.0104		0.0030	mg/L	22-FEB-17	22-FEB-17	R3659537
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-FEB-17	R3659928
Aggregate Organics							
COD	<10		10	mg/L		27-FEB-17	R3662496
Phenols (4AAP)	0.0043		0.0010	mg/L		24-FEB-17	R3661334
Volatile Organic Compounds							
Acetone	<20		20	ug/L		23-FEB-17	R3659785

* 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
L1893052-3 EAST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:15 Matrix: WATER							
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Bromodichloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromoform	<1.0		1.0	ug/L		23-FEB-17	R3659785
Bromomethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Carbon tetrachloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
Chlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dibromochloromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Chloroform	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,2-Dibromoethane	<0.20		0.20	ug/L		23-FEB-17	R3659785
1,2-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,3-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,4-Dichlorobenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichlorodifluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
1,1-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,2-Dichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Dichloromethane	<2.0		2.0	ug/L		23-FEB-17	R3659785
1,2-Dichloropropane	<0.50		0.50	ug/L		23-FEB-17	R3659785
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Ethylbenzene	<0.50		0.50	ug/L		23-FEB-17	R3659785
n-Hexane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Methyl Ethyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
Methyl Isobutyl Ketone	<20		20	ug/L		23-FEB-17	R3659785
MTBE	<0.50		0.50	ug/L		23-FEB-17	R3659785
Styrene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Tetrachloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Toluene	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,1-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
1,1,2-Trichloroethane	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichloroethylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
Trichlorofluoromethane	<1.0		1.0	ug/L		23-FEB-17	R3659785
Vinyl chloride	<0.50		0.50	ug/L		23-FEB-17	R3659785
o-Xylene	<0.50		0.50	ug/L		23-FEB-17	R3659785
m+p-Xylenes	<1.0		1.0	ug/L		23-FEB-17	R3659785
Xylenes (Total)	<1.1		1.1	ug/L		23-FEB-17	

* 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
L1893052-3 EAST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:15 Matrix: WATER							
Volatile Organic Compounds							
Surrogate: 4-Bromofluorobenzene	96.6		70-130	%		23-FEB-17	R3659785
Surrogate: 1,4-Difluorobenzene	104.8		70-130	%		23-FEB-17	R3659785
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		23-FEB-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661368
Surrogate: Phenol d5	37.3		30-130	%	23-FEB-17	24-FEB-17	R3661368
Surrogate: 2,4,6-Tribromophenol	99.8		40-150	%	23-FEB-17	24-FEB-17	R3661368
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Acenaphthylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(a)pyrene	<0.050		0.050	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
4-Chloroaniline	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Chlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Chrysene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-FEB-17	24-FEB-17	R3661257
Diethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Dimethylphthalate	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-FEB-17	24-FEB-17	R3661257
Fluoranthene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Fluorene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobenzene	<0.040		0.040	ug/L	23-FEB-17	24-FEB-17	R3661257
Hexachlorobutadiene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
1-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2-Methylnaphthalene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
Naphthalene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257

* 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
L1893052-3 EAST RETENTION POND Sampled By: CLIENT on 21-FEB-17 @ 11:15 Matrix: WATER							
Semi-Volatile Organics							
Pentachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Perylene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Phenanthrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
Pyrene	<0.20		0.20	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-FEB-17	24-FEB-17	R3661257
Surrogate: 2-Fluorobiphenyl	90.7		40-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: Nitrobenzene d5	92.8		50-130	%	23-FEB-17	24-FEB-17	R3661257
Surrogate: p-Terphenyl d14	106.0		40-130	%	23-FEB-17	24-FEB-17	R3661257

* 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	L1893052-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1893052-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L1893052-1, -2
Matrix Spike	Ammonia, Total (as N)	MS-B	L1893052-3

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).
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	SW846 8270

Aqueous samples are extracted and extracts are analyzed on GC/MSD.

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 CaCO3)	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, 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.

ETL-NH3-UNION-CLI-WT	Water	Un-ionized ammonia	CALCULATION

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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.

Reference Information

** 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: L1893052 Report Date: 28-FEB-17

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 R3661368								
WG2483848-2 LCS								
2,3,6-Trichlorophenol			89.4		%		50-130	24-FEB-17
WG2483848-3 LCSD		**WG2483848-2**						
2,3,6-Trichlorophenol		89.4	101.8		%	13	50	24-FEB-17
WG2483848-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	24-FEB-17
Surrogate: Phenol d5			37.0		%		30-130	24-FEB-17
Surrogate: 2,4,6-Tribromophenol			94.0		%		40-150	24-FEB-17
625-WT	**Water**							
Batch R3661257								
WG2483848-2 LCS								
1-Methylnaphthalene			92.6		%		50-140	24-FEB-17
1,2-Dichlorobenzene			76.8		%		40-130	24-FEB-17
1,2,4-Trichlorobenzene			77.2		%		40-130	24-FEB-17
1,3-Dichlorobenzene			76.1		%		50-140	24-FEB-17
1,4-Dichlorobenzene			75.1		%		40-130	24-FEB-17
2-Chlorophenol			77.9		%		50-140	24-FEB-17
2-Methylnaphthalene			81.4		%		50-140	24-FEB-17
2,3,4,5-Tetrachlorophenol			102.8		%		50-140	24-FEB-17
2,3,4,6-Tetrachlorophenol			104.5		%		50-140	24-FEB-17
2,4-Dichlorophenol			90.7		%		50-140	24-FEB-17
2,4-Dimethylphenol			87.6		%		50-140	24-FEB-17
2,4-Dinitrophenol			84.7		%		40-140	24-FEB-17
2,4-Dinitrotoluene			98.0		%		50-140	24-FEB-17
2,4,5-Trichlorophenol			94.2		%		50-140	24-FEB-17
2,4,6-Trichlorophenol			95.8		%		50-140	24-FEB-17
2,6-Dinitrotoluene			93.7		%		50-140	24-FEB-17
3,3'-Dichlorobenzidine			68.7		%		50-140	24-FEB-17
4-Chloroaniline			60.9		%		30-140	24-FEB-17
Acenaphthene			84.4		%		50-140	24-FEB-17
Acenaphthylene			88.2		%		50-140	24-FEB-17
Anthracene			96.1		%		50-140	24-FEB-17
Benzo(a)anthracene			93.5		%		50-140	24-FEB-17
Benzo(a)pyrene			97.5		%		60-130	24-FEB-17
Benzo(b)fluoranthene			90.6		%		50-140	24-FEB-17

Quality Control Report

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 R3661257								
WG2483848-2 LCS								
Benzo(ghi)perylene			98.5		%		50-140	24-FEB-17
Benzo(k)fluoranthene			101.5		%		50-140	24-FEB-17
Bis(2-chloroethyl)ether			90.7		%		50-140	24-FEB-17
Bis(2-ethylhexyl)phthalate			88.1		%		50-140	24-FEB-17
Chrysene			95.2		%		50-140	24-FEB-17
Dibenzo(a,h)anthracene			97.8		%		50-140	24-FEB-17
Diethylphthalate			89.6		%		50-140	24-FEB-17
Dimethylphthalate			85.6		%		50-140	24-FEB-17
Fluoranthene			88.2		%		50-140	24-FEB-17
Fluorene			93.8		%		50-140	24-FEB-17
Hexachlorobenzene			93.7		%		40-130	24-FEB-17
Hexachlorobutadiene			71.4		%		40-130	24-FEB-17
Indeno(1,2,3-cd)pyrene			93.1		%		50-140	24-FEB-17
Naphthalene			83.4		%		50-140	24-FEB-17
Pentachlorophenol			96.2		%		50-140	24-FEB-17
Perylene			103.3		%		50-140	24-FEB-17
Phenanthrene			96.9		%		50-140	24-FEB-17
Pyrene			89.6		%		50-140	24-FEB-17
WG2483848-3 LCSD		**WG2483848-2**						
1-Methylnaphthalene		92.6	98.2		%	5.8	50	24-FEB-17
1,2-Dichlorobenzene		76.8	77.3		%	0.6	50	24-FEB-17
1,2,4-Trichlorobenzene		77.2	80.6		%	4.2	50	24-FEB-17
1,3-Dichlorobenzene		76.1	77.3		%	1.6	50	24-FEB-17
1,4-Dichlorobenzene		75.1	77.4		%	3.0	50	24-FEB-17
2-Chlorophenol		77.9	84.2		%	7.8	50	24-FEB-17
2-Methylnaphthalene		81.4	85.7		%	5.2	50	24-FEB-17
2,3,4,5-Tetrachlorophenol		102.8	110.1		%	6.8	50	24-FEB-17
2,3,4,6-Tetrachlorophenol		104.5	111.6		%	6.5	50	24-FEB-17
2,4-Dichlorophenol		90.7	99.5		%	9.2	50	24-FEB-17
2,4-Dimethylphenol		87.6	95.7		%	8.9	50	24-FEB-17
2,4-Dinitrophenol		84.7	73.1		%	15	50	24-FEB-17
2,4-Dinitrotoluene		98.0	102.8		%	4.8	50	24-FEB-17
2,4,5-Trichlorophenol		94.2	104.1		%	9.9	50	24-FEB-17

Quality Control Report

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 R3661257								
WG2483848-3 LCSD		**WG2483848-2**						
2,4,6-Trichlorophenol		95.8	104.4		%	8.6	50	24-FEB-17
2,6-Dinitrotoluene		93.7	100.7		%	7.1	50	24-FEB-17
3,3'-Dichlorobenzidine		68.7	79.7		%	15	50	24-FEB-17
4-Chloroaniline		60.9	69.0		%	12	50	24-FEB-17
Acenaphthene		84.4	89.5		%	5.8	50	24-FEB-17
Acenaphthylene		88.2	94.8		%	7.3	50	24-FEB-17
Anthracene		96.1	100.6		%	4.7	50	24-FEB-17
Benzo(a)anthracene		93.5	101.0		%	7.7	50	24-FEB-17
Benzo(a)pyrene		97.5	100.9		%	3.4	50	24-FEB-17
Benzo(b)fluoranthene		90.6	96.2		%	6.0	50	24-FEB-17
Benzo(ghi)perylene		98.5	110.5		%	12	50	24-FEB-17
Benzo(k)fluoranthene		101.5	101.6		%	0.1	50	24-FEB-17
Bis(2-chloroethyl)ether		90.7	95.4		%	5.0	50	24-FEB-17
Bis(2-ethylhexyl)phthalate		88.1	94.7		%	7.2	50	24-FEB-17
Chrysene		95.2	100.6		%	5.4	50	24-FEB-17
Dibenzo(a,h)anthracene		97.8	110.3		%	12	50	24-FEB-17
Diethylphthalate		89.6	93.0		%	3.7	50	24-FEB-17
Dimethylphthalate		85.6	91.6		%	6.7	50	24-FEB-17
Fluoranthene		88.2	94.0		%	6.4	50	24-FEB-17
Fluorene		93.8	97.2		%	3.5	50	24-FEB-17
Hexachlorobenzene		93.7	97.6		%	4.0	50	24-FEB-17
Hexachlorobutadiene		71.4	74.1		%	3.8	50	24-FEB-17
Indeno(1,2,3-cd)pyrene		93.1	105.2		%	12	50	24-FEB-17
Naphthalene		83.4	86.1		%	3.2	50	24-FEB-17
Pentachlorophenol		96.2	104.5		%	8.3	50	24-FEB-17
Perylene		103.3	109.5		%	5.8	50	24-FEB-17
Phenanthrene		96.9	100.3		%	3.5	50	24-FEB-17
Pyrene		89.6	93.9		%	4.7	50	24-FEB-17
WG2483848-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	24-FEB-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	24-FEB-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	24-FEB-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	24-FEB-17

Quality Control Report

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 R3661257								
WG2483848-1 MB								
1,4-Dichlorobenzene			<0.40		ug/L		0.4	24-FEB-17
2-Chlorophenol			<0.30		ug/L		0.3	24-FEB-17
2-Methylnaphthalene			<0.40		ug/L		0.4	24-FEB-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	24-FEB-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	24-FEB-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	24-FEB-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	24-FEB-17
2,4-Dinitrophenol			<1.0		ug/L		1	24-FEB-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	24-FEB-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	24-FEB-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	24-FEB-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	24-FEB-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	24-FEB-17
4-Chloroaniline			<0.40		ug/L		0.4	24-FEB-17
Acenaphthene			<0.20		ug/L		0.2	24-FEB-17
Acenaphthylene			<0.20		ug/L		0.2	24-FEB-17
Anthracene			<0.20		ug/L		0.2	24-FEB-17
Benzo(a)anthracene			<0.20		ug/L		0.2	24-FEB-17
Benzo(a)pyrene			<0.050		ug/L		0.05	24-FEB-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	24-FEB-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	24-FEB-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	24-FEB-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	24-FEB-17
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	24-FEB-17
Chrysene			<0.20		ug/L		0.2	24-FEB-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	24-FEB-17
Diethylphthalate			<0.20		ug/L		0.2	24-FEB-17
Dimethylphthalate			<0.20		ug/L		0.2	24-FEB-17
Fluoranthene			<0.20		ug/L		0.2	24-FEB-17
Fluorene			<0.20		ug/L		0.2	24-FEB-17
Hexachlorobenzene			<0.040		ug/L		0.04	24-FEB-17
Hexachlorobutadiene			<0.20		ug/L		0.2	24-FEB-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	24-FEB-17

Quality Control Report

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 R3661257								
WG2483848-1 MB								
Naphthalene			<0.20		ug/L		0.2	24-FEB-17
Pentachlorophenol			<0.50		ug/L		0.5	24-FEB-17
Perylene			<0.20		ug/L		0.2	24-FEB-17
Phenanthrene			<0.20		ug/L		0.2	24-FEB-17
Pyrene			<0.20		ug/L		0.2	24-FEB-17
Surrogate: 2-Fluorobiphenyl			85.1		%		40-130	24-FEB-17
Surrogate: Nitrobenzene d5			92.7		%		50-130	24-FEB-17
Surrogate: p-Terphenyl d14			103.7		%		40-130	24-FEB-17
ALK-WT	**Water**							
Batch R3659659								
WG2483741-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			101.8		%		80-120	22-FEB-17
WG2483741-4 DUP		**L1893367-1**						
Alkalinity, Total (as CaCO3)		280	272		mg/L	2.9	20	22-FEB-17
WG2483741-2 LCS								
Alkalinity, Total (as CaCO3)			105.8		%		85-115	22-FEB-17
WG2483741-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	22-FEB-17
BR-IC-N-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	23-FEB-17
WG2484016-2 LCS								
Bromide (Br)			104.1		%		85-115	23-FEB-17
WG2484016-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Bromide (Br)			104.9		%		75-125	23-FEB-17
C-DIS-ORG-WT	**Water**							
Batch R3660485								
WG2483798-3 DUP		**L1891941-1**						
Dissolved Organic Carbon		3.8	4.3		mg/L	13	20	22-FEB-17
WG2483798-2 LCS								
Dissolved Organic Carbon			100.5		%		80-120	22-FEB-17
WG2483798-1 MB								
Dissolved Organic Carbon			<1.0				1	

Quality Control Report

Client: GHD Limited (Waterloo)
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 R3660485								
WG2483798-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	22-FEB-17
WG2483798-4 MS		**L1891941-1**						
Dissolved Organic Carbon			102.6		%		70-130	22-FEB-17
CL-IC-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Chloride (Cl)		45.7	46.5		mg/L	1.7	25	23-FEB-17
WG2484016-2 LCS								
Chloride (Cl)			101.0		%		70-130	23-FEB-17
WG2484016-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Chloride (Cl)			103.1		%		70-130	23-FEB-17
CN-TOT-WT	**Water**							
Batch R3659737								
WG2483515-3 DUP		**L1892481-1**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-FEB-17
WG2483515-2 LCS								
Cyanide, Total			92.3		%		80-120	22-FEB-17
WG2483515-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	22-FEB-17
WG2483515-4 MS		**L1892481-1**						
Cyanide, Total			83.0		%		70-130	22-FEB-17
COD-T-WT	**Water**							
Batch R3662496								
WG2486111-3 DUP		**L1893080-2**						
COD		18	20		mg/L	11	20	27-FEB-17
WG2486111-2 LCS								
COD			100.6		%		85-115	27-FEB-17
WG2486111-1 MB								
COD			<10		mg/L		10	27-FEB-17
WG2486111-4 MS		**L1893080-2**						
COD			97.1		%		75-125	27-FEB-17
CR-CR6-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
CR-CR6-IC-WT	**Water**							
Batch R3659928								
WG2483900-4 DUP		**WG2483900-3**						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-17
WG2483900-2 LCS								
Chromium, Hexavalent			101.1		%		80-120	22-FEB-17
WG2483900-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	22-FEB-17
WG2483900-5 MS		**WG2483900-3**						
Chromium, Hexavalent			95.6		%		70-130	22-FEB-17
EC-WT	**Water**							
Batch R3659749								
WG2483175-8 DUP		**WG2483175-7**						
Conductivity		863	864		umhos/cm	0.1	10	22-FEB-17
WG2483175-5 LCS								
Conductivity			101.7		%		90-110	22-FEB-17
WG2483175-6 MB								
Conductivity			<3.0		umhos/cm		3	22-FEB-17
F-IC-N-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Fluoride (F)		0.518	0.526		mg/L	1.5	20	23-FEB-17
WG2484016-2 LCS								
Fluoride (F)			100.2		%		90-110	23-FEB-17
WG2484016-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Fluoride (F)			97.3		%		75-125	23-FEB-17
HG-T-CVAA-WT	**Water**							
Batch R3660018								
WG2483941-3 DUP		**L1892962-1**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-FEB-17
WG2483941-2 LCS								
Mercury (Hg)-Total			101.0		%		80-120	23-FEB-17
WG2483941-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	23-FEB-17
WG2483941-4 MS		**L1893052-1**						
Mercury (Hg)-Total			97.1		%		70-130	23-FEB-17
MET-T-CCMS-WT	**Water**							

Quality Control Report

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 R3659537								
WG2483464-4 DUP		**WG2483464-3**						
Aluminum (Al)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-FEB-17
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-17
Arsenic (As)-Total		0.00176	0.00169		mg/L	4.0	20	22-FEB-17
Barium (Ba)-Total		0.282	0.280		mg/L	0.8	20	22-FEB-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-17
Boron (B)-Total		0.020	0.017		mg/L	15	20	22-FEB-17
Cadmium (Cd)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-FEB-17
Calcium (Ca)-Total		102	88.8		mg/L	14	20	22-FEB-17
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-17
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-17
Iron (Fe)-Total		2.40	2.37		mg/L	1.6	20	22-FEB-17
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-17
Magnesium (Mg)-Total		24.8	24.8		mg/L	0.3	20	22-FEB-17
Manganese (Mn)-Total		0.0599	0.0604		mg/L	1.0	20	22-FEB-17
Molybdenum (Mo)-Total		0.000705	0.000622		mg/L	13	20	22-FEB-17
Nickel (Ni)-Total		0.00103	0.00102		mg/L	1.4	20	22-FEB-17
Potassium (K)-Total		9.41	9.29		mg/L	1.3	20	22-FEB-17
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-17
Silicon (Si)-Total		5.76	5.70		mg/L	0.9	20	22-FEB-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-17
Sodium (Na)-Total		21.7	21.6		mg/L	0.5	20	22-FEB-17
Strontium (Sr)-Total		0.472	0.407		mg/L	15	20	22-FEB-17
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-FEB-17
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-17
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-17
Zinc (Zn)-Total		0.0076	0.0077		mg/L	1.2	20	22-FEB-17
WG2483464-2 LCS								
Aluminum (Al)-Total			93.8		%		80-120	22-FEB-17
Antimony (Sb)-Total			94.8		%		80-120	22-FEB-17
Arsenic (As)-Total			94.9		%		80-120	22-FEB-17
Barium (Ba)-Total			94.7		%		80-120	22-FEB-17
Beryllium (Be)-Total			89.4		%		80-120	22-FEB-17

Quality Control Report

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 R3659537								
WG2483464-2 LCS								
Bismuth (Bi)-Total			98.4		%		80-120	22-FEB-17
Boron (B)-Total			85.6		%		80-120	22-FEB-17
Cadmium (Cd)-Total			93.4		%		80-120	22-FEB-17
Calcium (Ca)-Total			90.7		%		80-120	22-FEB-17
Cobalt (Co)-Total			94.7		%		80-120	22-FEB-17
Copper (Cu)-Total			93.1		%		80-120	22-FEB-17
Iron (Fe)-Total			87.8		%		80-120	22-FEB-17
Lead (Pb)-Total			98.8		%		80-120	22-FEB-17
Magnesium (Mg)-Total			95.7		%		80-120	22-FEB-17
Manganese (Mn)-Total			96.3		%		80-120	22-FEB-17
Molybdenum (Mo)-Total			92.0		%		80-120	22-FEB-17
Nickel (Ni)-Total			93.0		%		80-120	22-FEB-17
Potassium (K)-Total			91.7		%		80-120	22-FEB-17
Selenium (Se)-Total			91.9		%		80-120	22-FEB-17
Silicon (Si)-Total			102.1		%		80-120	22-FEB-17
Silver (Ag)-Total			95.9		%		80-120	22-FEB-17
Sodium (Na)-Total			94.3		%		80-120	22-FEB-17
Strontium (Sr)-Total			97.4		%		80-120	22-FEB-17
Thallium (Tl)-Total			97.2		%		80-120	22-FEB-17
Tin (Sn)-Total			94.7		%		80-120	22-FEB-17
Vanadium (V)-Total			94.2		%		80-120	22-FEB-17
Zinc (Zn)-Total			89.5		%		80-120	22-FEB-17
WG2483464-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	22-FEB-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	22-FEB-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	22-FEB-17
Boron (B)-Total			<0.010		mg/L		0.01	22-FEB-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	22-FEB-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	22-FEB-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	22-FEB-17

Quality Control Report

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 R3659537								
WG2483464-1 MB								
Iron (Fe)-Total			<0.050		mg/L		0.05	22-FEB-17
Lead (Pb)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	22-FEB-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	22-FEB-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	22-FEB-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	22-FEB-17
Potassium (K)-Total			<0.050		mg/L		0.05	22-FEB-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	22-FEB-17
Silicon (Si)-Total			<0.050		mg/L		0.05	22-FEB-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	22-FEB-17
Sodium (Na)-Total			<0.50		mg/L		0.5	22-FEB-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	22-FEB-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	22-FEB-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	22-FEB-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	22-FEB-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	22-FEB-17
WG2483464-5 MS		**WG2483464-3**						
Aluminum (Al)-Total			91.8		%		70-130	22-FEB-17
Antimony (Sb)-Total			100.7		%		70-130	22-FEB-17
Arsenic (As)-Total			95.7		%		70-130	22-FEB-17
Barium (Ba)-Total			N/A	MS-B	%		-	22-FEB-17
Beryllium (Be)-Total			86.1		%		70-130	22-FEB-17
Bismuth (Bi)-Total			90.5		%		70-130	22-FEB-17
Boron (B)-Total			80.9		%		70-130	22-FEB-17
Cadmium (Cd)-Total			97.0		%		70-130	22-FEB-17
Calcium (Ca)-Total			N/A	MS-B	%		-	22-FEB-17
Cobalt (Co)-Total			91.4		%		70-130	22-FEB-17
Copper (Cu)-Total			87.9		%		70-130	22-FEB-17
Iron (Fe)-Total			N/A	MS-B	%		-	22-FEB-17
Lead (Pb)-Total			94.4		%		70-130	22-FEB-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	22-FEB-17
Manganese (Mn)-Total			N/A	MS-B	%		-	22-FEB-17
Molybdenum (Mo)-Total			90.6		%		70-130	22-FEB-17
Nickel (Ni)-Total			88.4		%		70-130	22-FEB-17

Quality Control Report

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 R3659537								
WG2483464-5 MS		**WG2483464-3**						
Potassium (K)-Total			N/A	MS-B	%		-	22-FEB-17
Selenium (Se)-Total			92.2		%		70-130	22-FEB-17
Silicon (Si)-Total			N/A	MS-B	%		-	22-FEB-17
Silver (Ag)-Total			95.9		%		70-130	22-FEB-17
Sodium (Na)-Total			N/A	MS-B	%		-	22-FEB-17
Strontium (Sr)-Total			N/A	MS-B	%		-	22-FEB-17
Thallium (Tl)-Total			93.9		%		70-130	22-FEB-17
Tin (Sn)-Total			100.4		%		70-130	22-FEB-17
Vanadium (V)-Total			96.0		%		70-130	22-FEB-17
Zinc (Zn)-Total			87.9		%		70-130	22-FEB-17
NH3-WT	**Water**							
Batch R3659839								
WG2483844-3 DUP		**L1892730-1**						
Ammonia, Total (as N)		10.7	10.8		mg/L	0.7	20	23-FEB-17
WG2483844-2 LCS								
Ammonia, Total (as N)			94.6		%		85-115	23-FEB-17
WG2483844-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	23-FEB-17
WG2483844-4 MS		**L1892730-1**						
Ammonia, Total (as N)			N/A	MS-B	%		-	23-FEB-17
Batch R3662293								
WG2485910-3 DUP		**L1894671-1**						
Ammonia, Total (as N)		115	126		mg/L	8.4	20	27-FEB-17
WG2485910-2 LCS								
Ammonia, Total (as N)			100.8		%		85-115	27-FEB-17
WG2485910-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	27-FEB-17
WG2485910-4 MS		**L1894671-1**						
Ammonia, Total (as N)			N/A	MS-B	%		-	27-FEB-17
NO2-IC-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	23-FEB-17
WG2484016-2 LCS								
Nitrite (as N)			101.4		%		70-130	23-FEB-17
WG2484016-1 MB								

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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT	**Water**							
Batch R3661216								
WG2484016-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Nitrite (as N)			99.9		%		70-130	23-FEB-17
NO3-IC-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	23-FEB-17
WG2484016-2 LCS								
Nitrate (as N)			99.4		%		70-130	23-FEB-17
WG2484016-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Nitrate (as N)			98.5		%		70-130	23-FEB-17
P-T-COL-WT	**Water**							
Batch R3661944								
WG2484996-3 DUP		**L1893095-5**						
Phosphorus, Total		0.0455	0.0419		mg/L	8.3	20	27-FEB-17
WG2484996-2 LCS								
Phosphorus, Total			103.6		%		80-120	26-FEB-17
WG2484996-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	27-FEB-17
WG2484996-4 MS		**L1893095-5**						
Phosphorus, Total			85.2		%		70-130	26-FEB-17
PH-WT	**Water**							
Batch R3659749								
WG2483175-8 DUP		**WG2483175-7**						
pH		7.59	7.59	J	pH units	0.00	0.2	22-FEB-17
WG2483175-5 LCS								
pH			7.00		pH units		6.9-7.1	22-FEB-17
PHENOLS-4AAP-WT	**Water**							
Batch R3660746								
WG2484202-7 DUP		**L1892520-1**						
Phenols (4AAP)		0.0039	0.0039		mg/L	0.1	20	24-FEB-17
WG2484202-6 LCS								
Phenols (4AAP)			108.7		%		85-115	24-FEB-17
WG2484202-5 MB								

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WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R3660746								
WG2484202-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	24-FEB-17
WG2484202-8 MS		**L1892520-1**						
Phenols (4AAP)			99.7		%		75-125	24-FEB-17
Batch R3661334								
WG2484695-3 DUP		**L1893052-3**						
Phenols (4AAP)		0.0043	0.0041		mg/L	4.2	20	24-FEB-17
WG2484695-2 LCS								
Phenols (4AAP)			106.9		%		85-115	24-FEB-17
WG2484695-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	24-FEB-17
WG2484695-4 MS		**L1893052-3**						
Phenols (4AAP)			105.3		%		75-125	24-FEB-17
SO4-IC-N-WT	**Water**							
Batch R3661216								
WG2484016-4 DUP		**WG2484016-3**						
Sulfate (SO4)		39.0	39.5		mg/L	1.3	20	23-FEB-17
WG2484016-2 LCS								
Sulfate (SO4)			100.3		%		90-110	23-FEB-17
WG2484016-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	23-FEB-17
WG2484016-5 MS		**WG2484016-3**						
Sulfate (SO4)			103.0		%		75-125	23-FEB-17
SOLIDS-TDS-WT	**Water**							
Batch R3662198								
WG2483979-3 DUP		**L1892606-1**						
Total Dissolved Solids		314	311		mg/L	1.1	20	23-FEB-17
WG2483979-2 LCS								
Total Dissolved Solids			100.9		%		85-115	23-FEB-17
WG2483979-1 MB								
Total Dissolved Solids			<10		mg/L		10	23-FEB-17
SOLIDS-TSS-WT	**Water**							
Batch R3662117								
WG2485298-3 DUP		**L1892846-1**						
Total Suspended Solids		89.9	92.8		mg/L	3.2	20	26-FEB-17
WG2485298-2 LCS								
Total Suspended Solids			101.4		%		85-115	26-FEB-17

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Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-WT	**Water**							
Batch R3662117								
WG2485298-1 MB								
Total Suspended Solids			<2.0		mg/L		2	26-FEB-17
Batch R3662120								
WG2485302-3 DUP		**L1893080-1**						
Total Suspended Solids		117	118		mg/L	1.3	20	26-FEB-17
WG2485302-2 LCS								
Total Suspended Solids			101.2		%		85-115	26-FEB-17
WG2485302-1 MB								
Total Suspended Solids			<2.0		mg/L		2	26-FEB-17
TKN-WT	**Water**							
Batch R3661283								
WG2484565-3 DUP		**L1893052-1**						
Total Kjeldahl Nitrogen		3.33	2.84		mg/L	16	20	24-FEB-17
WG2484565-2 LCS								
Total Kjeldahl Nitrogen			90.8		%		75-125	24-FEB-17
WG2484565-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	24-FEB-17
WG2484565-4 MS		**L1893052-1**						
Total Kjeldahl Nitrogen			109.5		%		70-130	24-FEB-17
Batch R3662329								
WG2485555-3 DUP		**L1893470-10**						
Total Kjeldahl Nitrogen		0.81	0.85		mg/L	4.8	20	27-FEB-17
WG2485555-2 LCS								
Total Kjeldahl Nitrogen			103.8		%		75-125	27-FEB-17
WG2485555-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	27-FEB-17
WG2485555-4 MS		**L1893470-10**						
Total Kjeldahl Nitrogen			121.1		%		70-130	27-FEB-17
VOC-ROU-HS-WT	**Water**							
Batch R3659785								
WG2483007-4 DUP		**WG2483007-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	23-FEB-17

Quality Control Report

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 R3659785								
WG2483007-4 DUP		**WG2483007-3**						
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	23-FEB-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	23-FEB-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	23-FEB-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
trans-1,3-Dichloropropene		<0.50	<0.50		ug/L			23-FEB-17

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Client: GHD Limited (Waterloo)
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 R3659785								
WG2483007-4 DUP		**WG2483007-3**						
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	23-FEB-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	23-FEB-17
WG2483007-1 LCS								
1,1,1,2-Tetrachloroethane			97.9		%		70-130	23-FEB-17
1,1,2,2-Tetrachloroethane			107.5		%		70-130	23-FEB-17
1,1,1-Trichloroethane			101.6		%		70-130	23-FEB-17
1,1,2-Trichloroethane			104.7		%		70-130	23-FEB-17
1,2-Dibromoethane			102.4		%		70-130	23-FEB-17
1,1-Dichloroethane			103.2		%		70-130	23-FEB-17
1,1-Dichloroethylene			101.5		%		70-130	23-FEB-17
1,2-Dichlorobenzene			98.9		%		70-130	23-FEB-17
1,2-Dichloroethane			111.0		%		70-130	23-FEB-17
1,2-Dichloropropane			109.6		%		70-130	23-FEB-17
1,3-Dichlorobenzene			97.6		%		70-130	23-FEB-17
1,4-Dichlorobenzene			98.9		%		70-130	23-FEB-17
Acetone			120.6		%		60-140	23-FEB-17
Benzene			104.3		%		70-130	23-FEB-17
Bromodichloromethane			105.9		%		70-130	23-FEB-17
Bromoform			101.3		%		70-130	23-FEB-17
Bromomethane			105.5		%		60-140	23-FEB-17
Carbon tetrachloride			98.3		%		70-130	23-FEB-17
Chlorobenzene			99.2		%		70-130	23-FEB-17
Chloroethane			107.7		%		70-130	23-FEB-17
Chloroform			106.4		%		70-130	23-FEB-17
cis-1,2-Dichloroethylene			105.0		%		70-130	23-FEB-17
cis-1,3-Dichloropropene			106.0		%		70-130	23-FEB-17
Dibromochloromethane			107.3		%		70-130	23-FEB-17
Dichlorodifluoromethane			89.9		%		50-140	23-FEB-17
Dichloromethane			112.1		%		70-130	23-FEB-17
Ethylbenzene			94.0		%		70-130	23-FEB-17
m+p-Xylenes			103.1		%		70-130	23-FEB-17
Methyl Ethyl Ketone			105.9				60-140	

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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 R3659785								
WG2483007-1 LCS								
Methyl Ethyl Ketone			105.9		%		60-140	23-FEB-17
Methyl Isobutyl Ketone			106.5		%		50-150	23-FEB-17
n-Hexane			108.3		%		70-130	23-FEB-17
MTBE			102.8		%		70-130	23-FEB-17
o-Xylene			98.8		%		70-130	23-FEB-17
Styrene			96.2		%		70-130	23-FEB-17
Tetrachloroethylene			93.8		%		70-130	23-FEB-17
Toluene			97.2		%		70-130	23-FEB-17
trans-1,2-Dichloroethylene			107.5		%		70-130	23-FEB-17
trans-1,3-Dichloropropene			99.5		%		70-130	23-FEB-17
Trichloroethylene			101.9		%		70-130	23-FEB-17
Trichlorofluoromethane			106.1		%		60-140	23-FEB-17
Vinyl chloride			102.5		%		60-140	23-FEB-17
WG2483007-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	23-FEB-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	23-FEB-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	23-FEB-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	23-FEB-17
1,2-Dibromoethane			<0.20		ug/L		0.2	23-FEB-17
1,1-Dichloroethane			<0.50		ug/L		0.5	23-FEB-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	23-FEB-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	23-FEB-17
1,2-Dichloroethane			<0.50		ug/L		0.5	23-FEB-17
1,2-Dichloropropane			<0.50		ug/L		0.5	23-FEB-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	23-FEB-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	23-FEB-17
Acetone			<20		ug/L		20	23-FEB-17
Benzene			<0.50		ug/L		0.5	23-FEB-17
Bromodichloromethane			<1.0		ug/L		1	23-FEB-17
Bromoform			<1.0		ug/L		1	23-FEB-17
Bromomethane			<0.50		ug/L		0.5	23-FEB-17
Carbon tetrachloride			<0.50		ug/L		0.5	23-FEB-17
Chlorobenzene			<0.50		ug/L		0.5	23-FEB-17
Chloroethane			<1.0		ug/L		1	23-FEB-17

Quality Control Report

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 R3659785								
WG2483007-2 MB								
Chloroform			<1.0		ug/L		1	23-FEB-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	23-FEB-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	23-FEB-17
Dibromochloromethane			<1.0		ug/L		1	23-FEB-17
Dichlorodifluoromethane			<1.0		ug/L		1	23-FEB-17
Dichloromethane			<2.0		ug/L		2	23-FEB-17
Ethylbenzene			<0.50		ug/L		0.5	23-FEB-17
m+p-Xylenes			<1.0		ug/L		1	23-FEB-17
Methyl Ethyl Ketone			<20		ug/L		20	23-FEB-17
Methyl Isobutyl Ketone			<20		ug/L		20	23-FEB-17
n-Hexane			<0.50		ug/L		0.5	23-FEB-17
MTBE			<0.50		ug/L		0.5	23-FEB-17
o-Xylene			<0.50		ug/L		0.5	23-FEB-17
Styrene			<0.50		ug/L		0.5	23-FEB-17
Tetrachloroethylene			<0.50		ug/L		0.5	23-FEB-17
Toluene			<0.50		ug/L		0.5	23-FEB-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	23-FEB-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	23-FEB-17
Trichloroethylene			<0.50		ug/L		0.5	23-FEB-17
Trichlorofluoromethane			<1.0		ug/L		1	23-FEB-17
Vinyl chloride			<0.50		ug/L		0.5	23-FEB-17
Surrogate: 1,4-Difluorobenzene			104.9		%		70-130	23-FEB-17
Surrogate: 4-Bromofluorobenzene			98.3		%		70-130	23-FEB-17

Quality Control Report

Workorder: L1893052 Report Date: 28-FEB-17

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

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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1893052-COFC

COC Number: 14 -

Page 1 of 1

Report To	Acct#13791
Company:	GHD LIMITED
Contact:	Jennifer Balkwill
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2
Phone:	519-884-0510

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ Yes ☐ No

☐ Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax Jennifer.Balkwill@ghd.com

Email 2 See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	
Same as Report To	☑ Yes ☐ No
Copy of Invoice with Report	☐ Yes ☐ No
Company:	GHD LIMITED
Contact:	Jennifer Balkwill

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX

Email 1 or Fax Jennifer.Balkwill@ghd.com

Email 2

Project Information

ALS Quote #:	
Job #:	44985
PO / AFE:	73503080
LSD:	

Oil and Gas Required Fields (client use)

Approver ID: Cost Center:

GL Account: Routing Code:

Activity Code:

Location:

ALS Lab Work Order # (lab use only): L1893052 pH 2an

ALS Contact: L.Ermeta

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
1	EQ POND	21/02/17	10:45	water												4	7.60	
2	West Retention Pond	21/02/17	11:00	water												4	7.48	
3	East Retention Pond	21/02/17	11:15	water												4	7.61	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C: 6.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: R Tobin	Date: Feb21/17	Time: 13:00	Received by:	Date:	Time:	Received by: [signature]	Date: 22/2/17	Time: 10:10

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e v09 Front/04 January 2014

SIF

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: 22-FEB-17
Report Date: 24-FEB-17 14:55 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1893350

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1893350-1 EQ POND Sampled By: CLIENT on 21-FEB-17 @ 10:45 Matrix: WATER							
Microtox Physical Tests							
Turbidity	N/A				24-FEB-17	24-FEB-17	R3661315
Colour	Colourless				24-FEB-17	24-FEB-17	R3661315
Clarification	None				24-FEB-17	24-FEB-17	R3661315
Initial pH	7.6		0.10	pH	24-FEB-17	24-FEB-17	R3661315
Final pH	7.6		0.10	pH	24-FEB-17	24-FEB-17	R3661315
Lab Treatment	None				24-FEB-17	24-FEB-17	R3661315
Microtox Original							
EC50 (15min) Original	>100		1.0	%	24-FEB-17	24-FEB-17	R3661315
EC20 (15min) Original	90.1		1.0	%	24-FEB-17	24-FEB-17	R3661315
EC50 (5min) Original	>100		1.0	%	24-FEB-17	24-FEB-17	R3661315
EC20 (5min) Original	69.6		1.0	%	24-FEB-17	24-FEB-17	R3661315
Interpretation Original	NON TOXIC				24-FEB-17	24-FEB-17	R3661315

* 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-ED	Water	Microtox Original	ERCB Directive 050
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-ED	Water	Microtox Physical Tests	ERCB Directive 050

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, 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: L1893350 Report Date: 24-FEB-17

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-ED	**Water**							
Batch R3661315								
WG2484951-2 CRM		**PHENOL_ED**						
EC50 (5min) Original			18.5		mg/L		13-26	24-FEB-17
WG2484951-3 CRM		**PHENOL_ED**						
EC50 (5min) Original			21.8		mg/L		13-26	24-FEB-17
WG2484951-4 DUP		**L1893350-1**						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		24-FEB-17
EC20 (15min) Original		90.1	>100	RPD-NA	%	N/A		24-FEB-17
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		24-FEB-17
EC20 (5min) Original		69.6	>100	RPD-NA	%	N/A		24-FEB-17
WG2484951-1 MB								
EC50 (15min) Original			PASS					24-FEB-17
EC20 (15min) Original			PASS					24-FEB-17
EC50 (5min) Original			PASS					24-FEB-17
EC20 (5min) Original			PASS					24-FEB-17

Quality Control Report

Workorder: L1893350 Report Date: 24-FEB-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1893350-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☒ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ 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:	73506479	Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: L.Ermeta	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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
	EQ POND	21/02/17	10:45	water	✓			2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ Yes ☑ No

Are samples for human drinking water use?
☐ Yes ☐ 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	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☑				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
R Tobin	Feb 21/17	13:00		21/02/17	18:40			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0329fr v08 Front/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: 21-MAR-17
Report Date: 27-MAR-17 08:49 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1903262

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-1 EQ POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.63		0.10	pH		21-MAR-17	R3680810
Temperature, Client	3.0		-50	Deg. C		21-MAR-17	R3680810
Physical Tests							
Conductivity	698		3.0	umhos/cm		22-MAR-17	R3681589
Hardness (as CaCO3)	275	HTC	10	mg/L		22-MAR-17	
pH	8.05		0.10	pH units		22-MAR-17	R3681589
Total Suspended Solids	3.1		2.0	mg/L	23-MAR-17	24-MAR-17	R3684337
Total Dissolved Solids	457	DLDS	20	mg/L		23-MAR-17	R3685435
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	129		10	mg/L		22-MAR-17	R3682644
Unionized ammonia	0.00397		0.00011	mg/L		23-MAR-17	
Ammonia, Total (as N)	0.727		0.020	mg/L		22-MAR-17	R3681475
Bromide (Br)	0.24		0.10	mg/L		22-MAR-17	R3682895
Chloride (Cl)	50.2		0.50	mg/L		22-MAR-17	R3682895
Fluoride (F)	0.505		0.020	mg/L		22-MAR-17	R3682895
Nitrate (as N)	0.400		0.020	mg/L		22-MAR-17	R3682895
Nitrite (as N)	<0.010		0.010	mg/L		22-MAR-17	R3682895
Total Kjeldahl Nitrogen	0.91		0.15	mg/L	22-MAR-17	22-MAR-17	R3682747
Phosphorus, Total	0.0155		0.0030	mg/L	22-MAR-17	23-MAR-17	R3681773
Sulfate (SO4)	147		0.30	mg/L		22-MAR-17	R3682895
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-MAR-17	R3682527
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.0		1.0	mg/L		22-MAR-17	R3681762
Total Metals							
Aluminum (Al)-Total	0.250		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Antimony (Sb)-Total	0.00043		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Arsenic (As)-Total	0.00081		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Barium (Ba)-Total	0.0397		0.00020	mg/L	21-MAR-17	22-MAR-17	R3681135
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Boron (B)-Total	0.094		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Cadmium (Cd)-Total	0.000033		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Calcium (Ca)-Total	77.7		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Cobalt (Co)-Total	0.00029		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Copper (Cu)-Total	0.0016		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Iron (Fe)-Total	0.196		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Lead (Pb)-Total	0.00022		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Magnesium (Mg)-Total	19.7		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Manganese (Mn)-Total	0.0104		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		22-MAR-17	R3681404
Molybdenum (Mo)-Total	0.0354		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135

* 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
L1903262-1 EQ POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:00 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00285		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Potassium (K)-Total	4.78		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Selenium (Se)-Total	0.00182		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Silicon (Si)-Total	2.23		0.10	mg/L	21-MAR-17	22-MAR-17	R3681135
Silver (Ag)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Sodium (Na)-Total	31.3		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Strontium (Sr)-Total	0.563		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Thallium (Tl)-Total	0.000015		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Tin (Sn)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Vanadium (V)-Total	0.00069		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	21-MAR-17	22-MAR-17	R3681135
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-MAR-17	R3681499
Aggregate Organics							
COD	17		10	mg/L		23-MAR-17	R3684097
Phenols (4AAP)	0.0017		0.0010	mg/L		23-MAR-17	R3684143
Volatile Organic Compounds							
Acetone	<20		20	ug/L		22-MAR-17	R3681178
Benzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Bromodichloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Bromoform	<1.0		1.0	ug/L		22-MAR-17	R3681178
Bromomethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Carbon tetrachloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
Chlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dibromochloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroform	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,2-Dibromoethane	<0.20		0.20	ug/L		22-MAR-17	R3681178
1,2-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,3-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,4-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichlorodifluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,1-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,2-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichloromethane	<2.0		2.0	ug/L		22-MAR-17	R3681178
1,2-Dichloropropane	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Ethylbenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-1 EQ POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:00 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Methyl Ethyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
Methyl Isobutyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
MTBE	<0.50		0.50	ug/L		22-MAR-17	R3681178
Styrene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Tetrachloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Toluene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,2-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichlorofluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Vinyl chloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
o-Xylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
m+p-Xylenes	<1.0		1.0	ug/L		22-MAR-17	R3681178
Xylenes (Total)	<1.1		1.1	ug/L		22-MAR-17	
Surrogate: 4-Bromofluorobenzene	100.7		70-130	%		22-MAR-17	R3681178
Surrogate: 1,4-Difluorobenzene	104.0		70-130	%		22-MAR-17	R3681178
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		22-MAR-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	27-MAR-17	R3685609
Surrogate: 2,4,6-Tribromophenol	102.8		40-150	%	23-MAR-17	27-MAR-17	R3685609
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Acenaphthylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)pyrene	<0.050		0.050	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
4-Chloroaniline	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Chlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Chrysene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-1 EQ POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Diethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dimethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluorene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Hexachlorobenzene	<0.040		0.040	ug/L	23-MAR-17	24-MAR-17	R3684584
Hexachlorobutadiene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Naphthalene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Pentachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Phenanthrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Surrogate: 2-Fluorobiphenyl	91.8		40-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: Nitrobenzene d5	99.0		50-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: p-Terphenyl d14	98.1		40-130	%	23-MAR-17	24-MAR-17	R3684584
L1903262-2 WEST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:15 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.86		0.10	pH		21-MAR-17	R3680810
Temperature, Client	3.0		-50	Deg. C		21-MAR-17	R3680810
Physical Tests							
Conductivity	624		3.0	umhos/cm		22-MAR-17	R3681589
Hardness (as CaCO3)	229	HTC	10	mg/L		22-MAR-17	
pH	8.09		0.10	pH units		22-MAR-17	R3681589
Total Suspended Solids	2.1		2.0	mg/L	23-MAR-17	24-MAR-17	R3684337
Total Dissolved Solids	389	DLDS	20	mg/L		23-MAR-17	R3685435
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	107		10	mg/L		22-MAR-17	R3682644

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-2 WEST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:15 Matrix: WATER							
Anions and Nutrients							
Unionized ammonia	0.00322		0.00019	mg/L		23-MAR-17	
Ammonia, Total (as N)	0.349		0.020	mg/L		22-MAR-17	R3681475
Bromide (Br)	0.23		0.10	mg/L		22-MAR-17	R3682895
Chloride (Cl)	43.8		0.50	mg/L		22-MAR-17	R3682895
Fluoride (F)	0.438		0.020	mg/L		22-MAR-17	R3682895
Nitrate (as N)	0.274		0.020	mg/L		22-MAR-17	R3682895
Nitrite (as N)	<0.010		0.010	mg/L		22-MAR-17	R3682895
Total Kjeldahl Nitrogen	0.59		0.15	mg/L	22-MAR-17	22-MAR-17	R3682747
Phosphorus, Total	0.0190		0.0030	mg/L	22-MAR-17	23-MAR-17	R3681773
Sulfate (SO4)	131		0.30	mg/L		22-MAR-17	R3682895
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-MAR-17	R3682527
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.5		1.0	mg/L		22-MAR-17	R3681762
Total Metals							
Aluminum (Al)-Total	0.278		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Antimony (Sb)-Total	0.00037		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Arsenic (As)-Total	0.00077		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Barium (Ba)-Total	0.0334		0.00020	mg/L	21-MAR-17	22-MAR-17	R3681135
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Boron (B)-Total	0.084		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Cadmium (Cd)-Total	0.000044		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Calcium (Ca)-Total	63.7		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Cobalt (Co)-Total	0.00030		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Copper (Cu)-Total	0.0016		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Iron (Fe)-Total	0.216		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Lead (Pb)-Total	0.00031		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Magnesium (Mg)-Total	17.0		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Manganese (Mn)-Total	0.0209		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		22-MAR-17	R3681404
Molybdenum (Mo)-Total	0.0291		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Nickel (Ni)-Total	0.00256		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Potassium (K)-Total	3.97		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Selenium (Se)-Total	0.00152		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Silicon (Si)-Total	2.06		0.10	mg/L	21-MAR-17	22-MAR-17	R3681135
Silver (Ag)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Sodium (Na)-Total	25.3		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Strontium (Sr)-Total	0.463		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Thallium (Tl)-Total	0.000018		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Tin (Sn)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Vanadium (V)-Total	0.00072		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-2 WEST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:15 Matrix: WATER							
Total Metals							
Zinc (Zn)-Total	0.0047		0.0030	mg/L	21-MAR-17	22-MAR-17	R3681135
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-MAR-17	R3681499
Aggregate Organics							
COD	18		10	mg/L		23-MAR-17	R3684097
Phenols (4AAP)	0.0012		0.0010	mg/L		23-MAR-17	R3684143
Volatile Organic Compounds							
Acetone	<20		20	ug/L		22-MAR-17	R3681178
Benzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Bromodichloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Bromoform	<1.0		1.0	ug/L		22-MAR-17	R3681178
Bromomethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Carbon tetrachloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
Chlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dibromochloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroform	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,2-Dibromoethane	<0.20		0.20	ug/L		22-MAR-17	R3681178
1,2-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,3-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,4-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichlorodifluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,1-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,2-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichloromethane	<2.0		2.0	ug/L		22-MAR-17	R3681178
1,2-Dichloropropane	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Ethylbenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
n-Hexane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Methyl Ethyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
Methyl Isobutyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
MTBE	<0.50		0.50	ug/L		22-MAR-17	R3681178
Styrene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Tetrachloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Toluene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178

* 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
L1903262-2 WEST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:15 Matrix: WATER							
Volatile Organic Compounds							
1,1,2-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichlorofluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Vinyl chloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
o-Xylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
m+p-Xylenes	<1.0		1.0	ug/L		22-MAR-17	R3681178
Xylenes (Total)	<1.1		1.1	ug/L		22-MAR-17	
Surrogate: 4-Bromofluorobenzene	101.7		70-130	%		22-MAR-17	R3681178
Surrogate: 1,4-Difluorobenzene	103.9		70-130	%		22-MAR-17	R3681178
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		22-MAR-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	27-MAR-17	R3685609
Surrogate: 2,4,6-Tribromophenol	95.4		40-150	%	23-MAR-17	27-MAR-17	R3685609
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Acenaphthylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)pyrene	<0.050		0.050	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
4-Chloroaniline	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Chlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Chrysene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Diethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dimethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluorene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584

* 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
L1903262-2 WEST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:15 Matrix: WATER							
Semi-Volatile Organics							
Hexachlorobenzene	<0.040		0.040	ug/L	23-MAR-17	24-MAR-17	R3684584
Hexachlorobutadiene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Naphthalene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Pentachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Phenanthrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Surrogate: 2-Fluorobiphenyl	90.1		40-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: Nitrobenzene d5	92.8		50-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: p-Terphenyl d14	90.3		40-130	%	23-MAR-17	24-MAR-17	R3684584
L1903262-3 EAST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	8.08		0.10	pH		21-MAR-17	R3680810
Temperature, Client	3.0		-50	Deg. C		21-MAR-17	R3680810
Physical Tests							
Conductivity	636		3.0	umhos/cm		22-MAR-17	R3681589
Hardness (as CaCO3)	254	HTC	10	mg/L		22-MAR-17	
pH	8.19		0.10	pH units		22-MAR-17	R3681589
Total Suspended Solids	20.5		2.0	mg/L	23-MAR-17	24-MAR-17	R3684337
Total Dissolved Solids	400	DLDS	20	mg/L		23-MAR-17	R3685435
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	105		10	mg/L		22-MAR-17	R3682644
Unionized ammonia	0.00191		0.00031	mg/L		23-MAR-17	
Ammonia, Total (as N)	0.125		0.020	mg/L		22-MAR-17	R3681475
Bromide (Br)	0.23		0.10	mg/L		22-MAR-17	R3682895
Chloride (Cl)	33.2		0.50	mg/L		22-MAR-17	R3682895
Fluoride (F)	0.474		0.020	mg/L		22-MAR-17	R3682895
Nitrate (as N)	0.172		0.020	mg/L		22-MAR-17	R3682895
Nitrite (as N)	<0.010		0.010	mg/L		22-MAR-17	R3682895
Total Kjeldahl Nitrogen	0.57		0.15	mg/L	22-MAR-17	22-MAR-17	R3682747
Phosphorus, Total	0.0420		0.0030	mg/L	22-MAR-17	23-MAR-17	R3681773
Sulfate (SO4)	143		0.30	mg/L		22-MAR-17	R3682895

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-3 EAST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:30 Matrix: WATER							
Anions and Nutrients							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		22-MAR-17	R3682527
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.0		1.0	mg/L		22-MAR-17	R3681762
Total Metals							
Aluminum (Al)-Total	0.689		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Antimony (Sb)-Total	0.00047		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Arsenic (As)-Total	0.00102		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Barium (Ba)-Total	0.0413		0.00020	mg/L	21-MAR-17	22-MAR-17	R3681135
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Boron (B)-Total	0.071		0.010	mg/L	21-MAR-17	22-MAR-17	R3681135
Cadmium (Cd)-Total	0.000049		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Calcium (Ca)-Total	69.9		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Cobalt (Co)-Total	0.00052		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Copper (Cu)-Total	0.0021		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Iron (Fe)-Total	0.572		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Lead (Pb)-Total	0.00054		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Magnesium (Mg)-Total	19.4		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Manganese (Mn)-Total	0.0354		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		22-MAR-17	R3681404
Molybdenum (Mo)-Total	0.0405		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Nickel (Ni)-Total	0.00279		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Potassium (K)-Total	4.35		0.050	mg/L	21-MAR-17	22-MAR-17	R3681135
Selenium (Se)-Total	0.00225		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Silicon (Si)-Total	3.07		0.10	mg/L	21-MAR-17	22-MAR-17	R3681135
Silver (Ag)-Total	<0.000050		0.000050	mg/L	21-MAR-17	22-MAR-17	R3681135
Sodium (Na)-Total	25.0		0.50	mg/L	21-MAR-17	22-MAR-17	R3681135
Strontium (Sr)-Total	0.583		0.0010	mg/L	21-MAR-17	22-MAR-17	R3681135
Thallium (Tl)-Total	0.000036		0.000010	mg/L	21-MAR-17	22-MAR-17	R3681135
Tin (Sn)-Total	<0.00010		0.00010	mg/L	21-MAR-17	22-MAR-17	R3681135
Vanadium (V)-Total	0.00160		0.00050	mg/L	21-MAR-17	22-MAR-17	R3681135
Zinc (Zn)-Total	0.0052		0.0030	mg/L	21-MAR-17	22-MAR-17	R3681135
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		22-MAR-17	R3681499
Aggregate Organics							
COD	<10		10	mg/L		23-MAR-17	R3684097
Phenols (4AAP)	<0.0010		0.0010	mg/L		23-MAR-17	R3684143
Volatile Organic Compounds							
Acetone	<20		20	ug/L		22-MAR-17	R3681178
Benzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Bromodichloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903262-3 EAST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:30 Matrix: WATER							
Volatile Organic Compounds							
Bromoform	<1.0		1.0	ug/L		22-MAR-17	R3681178
Bromomethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Carbon tetrachloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
Chlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dibromochloromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Chloroform	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,2-Dibromoethane	<0.20		0.20	ug/L		22-MAR-17	R3681178
1,2-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,3-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,4-Dichlorobenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichlorodifluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
1,1-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,2-Dichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Dichloromethane	<2.0		2.0	ug/L		22-MAR-17	R3681178
1,2-Dichloropropane	<0.50		0.50	ug/L		22-MAR-17	R3681178
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Ethylbenzene	<0.50		0.50	ug/L		22-MAR-17	R3681178
n-Hexane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Methyl Ethyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
Methyl Isobutyl Ketone	<20		20	ug/L		22-MAR-17	R3681178
MTBE	<0.50		0.50	ug/L		22-MAR-17	R3681178
Styrene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Tetrachloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Toluene	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,1-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
1,1,2-Trichloroethane	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichloroethylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
Trichlorofluoromethane	<1.0		1.0	ug/L		22-MAR-17	R3681178
Vinyl chloride	<0.50		0.50	ug/L		22-MAR-17	R3681178
o-Xylene	<0.50		0.50	ug/L		22-MAR-17	R3681178
m+p-Xylenes	<1.0		1.0	ug/L		22-MAR-17	R3681178
Xylenes (Total)	<1.1		1.1	ug/L		22-MAR-17	
Surrogate: 4-Bromofluorobenzene	101.4		70-130	%		22-MAR-17	R3681178
Surrogate: 1,4-Difluorobenzene	104.3		70-130	%		22-MAR-17	R3681178

* 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
L1903262-3 EAST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:30 Matrix: WATER							
Volatile Organic Compounds							
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		22-MAR-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	27-MAR-17	R3685609
Surrogate: 2,4,6-Tribromophenol	96.3		40-150	%	23-MAR-17	27-MAR-17	R3685609
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Acenaphthylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(a)pyrene	<0.050		0.050	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(b)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(ghi)perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Benzo(k)fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
4-Chloroaniline	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Chlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Chrysene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,3-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
1,4-Dichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dichlorophenol	<0.30		0.30	ug/L	23-MAR-17	24-MAR-17	R3684584
Diethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Dimethylphthalate	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dimethylphenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrophenol	<1.0		1.0	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,6-Dinitrotoluene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluoranthene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Fluorene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Hexachlorobenzene	<0.040		0.040	ug/L	23-MAR-17	24-MAR-17	R3684584
Hexachlorobutadiene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
1-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2-Methylnaphthalene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
Naphthalene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Pentachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Perylene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
Phenanthrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584

* 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
L1903262-3 EAST RETENTION POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:30 Matrix: WATER							
Semi-Volatile Organics							
Pyrene	<0.20		0.20	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	23-MAR-17	24-MAR-17	R3684584
Surrogate: 2-Fluorobiphenyl	91.0		40-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: Nitrobenzene d5	95.0		50-130	%	23-MAR-17	24-MAR-17	R3684584
Surrogate: p-Terphenyl d14	94.6		40-130	%	23-MAR-17	24-MAR-17	R3684584

* 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	Chloride (Cl)	MS-B	L1903262-1, -2, -3
Matrix Spike	Aluminum (Al)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Boron (B)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1903262-1, -2, -3
Matrix Spike	Phenols (4AAP)	MS-B	L1903262-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1903262-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
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	SW846 8270

Aqueous samples are extracted and extracts are analyzed on GC/MSD.

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 CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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, 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	ISO 14403-2

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

Reference Information

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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

Reference Information

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: L1903262 Report Date: 27-MAR-17

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 R3685609								
WG2498665-2 LCS								
2,3,6-Trichlorophenol			88.2		%		50-130	27-MAR-17
WG2498665-3 LCSD		**WG2498665-2**						
2,3,6-Trichlorophenol		88.2	90.1		%	2.1	50	27-MAR-17
WG2498665-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	27-MAR-17
Surrogate: 2,4,6-Tribromophenol			97.3		%		40-150	27-MAR-17
625-WT	**Water**							
Batch R3684584								
WG2498665-2 LCS								
1-Methylnaphthalene			91.2		%		50-140	24-MAR-17
1,2-Dichlorobenzene			76.2		%		40-130	24-MAR-17
1,2,4-Trichlorobenzene			76.7		%		40-130	24-MAR-17
1,3-Dichlorobenzene			76.6		%		50-140	24-MAR-17
1,4-Dichlorobenzene			74.0		%		40-130	24-MAR-17
2-Chlorophenol			79.5		%		50-140	24-MAR-17
2-Methylnaphthalene			81.3		%		50-140	24-MAR-17
2,3,4,5-Tetrachlorophenol			94.3		%		50-140	24-MAR-17
2,3,4,6-Tetrachlorophenol			96.7		%		50-140	24-MAR-17
2,4-Dichlorophenol			93.3		%		50-140	24-MAR-17
2,4-Dimethylphenol			81.8		%		50-140	24-MAR-17
2,4-Dinitrophenol			71.4		%		40-140	24-MAR-17
2,4-Dinitrotoluene			101.3		%		50-140	24-MAR-17
2,4,5-Trichlorophenol			100.7		%		50-140	24-MAR-17
2,4,6-Trichlorophenol			97.9		%		50-140	24-MAR-17
2,6-Dinitrotoluene			96.1		%		50-140	24-MAR-17
3,3'-Dichlorobenzidine			60.7		%		50-140	24-MAR-17
4-Chloroaniline			74.0		%		30-140	24-MAR-17
Acenaphthene			82.8		%		50-140	24-MAR-17
Acenaphthylene			87.9		%		50-140	24-MAR-17
Anthracene			92.8		%		50-140	24-MAR-17
Benzo(a)anthracene			91.5		%		50-140	24-MAR-17
Benzo(a)pyrene			90.7		%		60-130	24-MAR-17
Benzo(b)fluoranthene			88.0		%		50-140	24-MAR-17
Benzo(ghi)perylene			68.9		%		50-140	24-MAR-17

Quality Control Report

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 R3684584								
WG2498665-2 LCS								
Benzo(k)fluoranthene			104.3		%		50-140	24-MAR-17
Bis(2-chloroethyl)ether			86.8		%		50-140	24-MAR-17
Bis(2-ethylhexyl)phthalate			97.3		%		50-140	24-MAR-17
Chrysene			90.6		%		50-140	24-MAR-17
Dibenzo(a,h)anthracene			71.5		%		50-140	24-MAR-17
Diethylphthalate			82.3		%		50-140	24-MAR-17
Dimethylphthalate			81.1		%		50-140	24-MAR-17
Fluoranthene			101.4		%		50-140	24-MAR-17
Fluorene			86.5		%		50-140	24-MAR-17
Hexachlorobenzene			86.9		%		40-130	24-MAR-17
Hexachlorobutadiene			70.2		%		40-130	24-MAR-17
Indeno(1,2,3-cd)pyrene			70.9		%		50-140	24-MAR-17
Naphthalene			82.5		%		50-140	24-MAR-17
Pentachlorophenol			88.8		%		50-140	24-MAR-17
Perylene			96.3		%		50-140	24-MAR-17
Phenanthrene			87.7		%		50-140	24-MAR-17
Pyrene			102.5		%		50-140	24-MAR-17
WG2498665-3 LCSD		**WG2498665-2**						
1-Methylnaphthalene		91.2	92.9		%	1.9	50	24-MAR-17
1,2-Dichlorobenzene		76.2	76.3		%	0.2	50	24-MAR-17
1,2,4-Trichlorobenzene		76.7	78.0		%	1.7	50	24-MAR-17
1,3-Dichlorobenzene		76.6	77.2		%	0.7	50	24-MAR-17
1,4-Dichlorobenzene		74.0	75.1		%	1.5	50	24-MAR-17
2-Chlorophenol		79.5	80.7		%	1.5	50	24-MAR-17
2-Methylnaphthalene		81.3	83.2		%	2.2	50	24-MAR-17
2,3,4,5-Tetrachlorophenol		94.3	94.5		%	0.2	50	24-MAR-17
2,3,4,6-Tetrachlorophenol		96.7	97.3		%	0.7	50	24-MAR-17
2,4-Dichlorophenol		93.3	94.2		%	1.0	50	24-MAR-17
2,4-Dimethylphenol		81.8	68.8		%	17	50	24-MAR-17
2,4-Dinitrophenol		71.4	78.0		%	8.8	50	24-MAR-17
2,4-Dinitrotoluene		101.3	103.5		%	2.1	50	24-MAR-17
2,4,5-Trichlorophenol		100.7	102.8		%	2.1	50	24-MAR-17
2,4,6-Trichlorophenol		97.9	99.2		%	1.3	50	24-MAR-17

Quality Control Report

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 R3684584								
WG2498665-3 LCSD		**WG2498665-2**						
2,6-Dinitrotoluene		96.1	100.5		%	4.5	50	24-MAR-17
3,3'-Dichlorobenzidine		60.7	67.8		%	11	50	24-MAR-17
4-Chloroaniline		74.0	70.9		%	4.3	50	24-MAR-17
Acenaphthene		82.8	84.0		%	1.4	50	24-MAR-17
Acenaphthylene		87.9	89.0		%	1.2	50	24-MAR-17
Anthracene		92.8	92.2		%	0.6	50	24-MAR-17
Benzo(a)anthracene		91.5	92.6		%	1.2	50	24-MAR-17
Benzo(a)pyrene		90.7	94.2		%	3.8	50	24-MAR-17
Benzo(b)fluoranthene		88.0	90.2		%	2.4	50	24-MAR-17
Benzo(ghi)perylene		68.9	68.6		%	0.3	50	24-MAR-17
Benzo(k)fluoranthene		104.3	101.5		%	2.7	50	24-MAR-17
Bis(2-chloroethyl)ether		86.8	88.6		%	2.1	50	24-MAR-17
Bis(2-ethylhexyl)phthalate		97.3	93.6		%	3.8	50	24-MAR-17
Chrysene		90.6	90.6		%	0.0	50	24-MAR-17
Dibenzo(a,h)anthracene		71.5	71.9		%	0.4	50	24-MAR-17
Diethylphthalate		82.3	81.7		%	0.7	50	24-MAR-17
Dimethylphthalate		81.1	83.3		%	2.7	50	24-MAR-17
Fluoranthene		101.4	100.2		%	1.2	50	24-MAR-17
Fluorene		86.5	86.6		%	0.2	50	24-MAR-17
Hexachlorobenzene		86.9	87.1		%	0.3	50	24-MAR-17
Hexachlorobutadiene		70.2	73.0		%	3.9	50	24-MAR-17
Indeno(1,2,3-cd)pyrene		70.9	71.7		%	1.2	50	24-MAR-17
Naphthalene		82.5	83.9		%	1.6	50	24-MAR-17
Pentachlorophenol		88.8	90.8		%	2.2	50	24-MAR-17
Perylene		96.3	95.9		%	0.5	50	24-MAR-17
Phenanthrene		87.7	88.5		%	0.9	50	24-MAR-17
Pyrene		102.5	99.0		%	3.5	50	24-MAR-17
WG2498665-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	24-MAR-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	24-MAR-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	24-MAR-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	24-MAR-17
1,4-Dichlorobenzene			<0.40		ug/L		0.4	24-MAR-17

Quality Control Report

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 R3684584								
WG2498665-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	24-MAR-17
2-Methylnaphthalene			<0.40		ug/L		0.4	24-MAR-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	24-MAR-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	24-MAR-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	24-MAR-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	24-MAR-17
2,4-Dinitrophenol			<1.0		ug/L		1	24-MAR-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	24-MAR-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	24-MAR-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	24-MAR-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	24-MAR-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	24-MAR-17
4-Chloroaniline			<0.40		ug/L		0.4	24-MAR-17
Acenaphthene			<0.20		ug/L		0.2	24-MAR-17
Acenaphthylene			<0.20		ug/L		0.2	24-MAR-17
Anthracene			<0.20		ug/L		0.2	24-MAR-17
Benzo(a)anthracene			<0.20		ug/L		0.2	24-MAR-17
Benzo(a)pyrene			<0.050		ug/L		0.05	24-MAR-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	24-MAR-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	24-MAR-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	24-MAR-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	24-MAR-17
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	24-MAR-17
Chrysene			<0.20		ug/L		0.2	24-MAR-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	24-MAR-17
Diethylphthalate			<0.20		ug/L		0.2	24-MAR-17
Dimethylphthalate			<0.20		ug/L		0.2	24-MAR-17
Fluoranthene			<0.20		ug/L		0.2	24-MAR-17
Fluorene			<0.20		ug/L		0.2	24-MAR-17
Hexachlorobenzene			<0.040		ug/L		0.04	24-MAR-17
Hexachlorobutadiene			<0.20		ug/L		0.2	24-MAR-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	24-MAR-17
Naphthalene			<0.20		ug/L		0.2	24-MAR-17

Quality Control Report

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 R3684584								
WG2498665-1 MB								
Pentachlorophenol			<0.50		ug/L		0.5	24-MAR-17
Perylene			<0.20		ug/L		0.2	24-MAR-17
Phenanthrene			<0.20		ug/L		0.2	24-MAR-17
Pyrene			<0.20		ug/L		0.2	24-MAR-17
Surrogate: 2-Fluorobiphenyl			86.3		%		40-130	24-MAR-17
Surrogate: Nitrobenzene d5			89.8		%		50-130	24-MAR-17
Surrogate: p-Terphenyl d14			98.9		%		40-130	24-MAR-17
ALK-WT	**Water**							
Batch R3682644								
WG2498573-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			100.7		%		80-120	22-MAR-17
WG2498573-4 DUP		**L1902737-1**						
Alkalinity, Total (as CaCO3)		107	100		mg/L	6.9	20	22-MAR-17
WG2498573-2 LCS								
Alkalinity, Total (as CaCO3)			100.9		%		85-115	22-MAR-17
WG2498573-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	22-MAR-17
BR-IC-N-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	22-MAR-17
WG2498239-2 LCS								
Bromide (Br)			103.1		%		85-115	22-MAR-17
WG2498239-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Bromide (Br)			90.9		%		75-125	22-MAR-17
C-DIS-ORG-WT	**Water**							
Batch R3681762								
WG2497891-3 DUP		**L1902737-6**						
Dissolved Organic Carbon		<1.0	<1.0	RPD-NA	mg/L	N/A	20	22-MAR-17
WG2497891-2 LCS								
Dissolved Organic Carbon			100.7		%		80-120	22-MAR-17
WG2497891-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	22-MAR-17
WG2497891-4 MS		**L1902737-6**						

Quality Control Report

Client: GHD Limited (Waterloo)
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 R3681762								
WG2497891-4 MS		**L1902737-6**						
Dissolved Organic Carbon			101.4		%		70-130	22-MAR-17
CL-IC-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Chloride (Cl)		195	195		mg/L	0.0	25	22-MAR-17
WG2498239-2 LCS								
Chloride (Cl)			101.8		%		70-130	22-MAR-17
WG2498239-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Chloride (Cl)			N/A	MS-B	%		-	22-MAR-17
CN-TOT-WT	**Water**							
Batch R3682527								
WG2498414-3 DUP		**L1903283-1**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-MAR-17
WG2498414-2 LCS								
Cyanide, Total			94.1		%		80-120	22-MAR-17
WG2498414-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	22-MAR-17
WG2498414-4 MS		**L1903283-1**						
Cyanide, Total			79.5		%		70-130	22-MAR-17
COD-T-WT	**Water**							
Batch R3684097								
WG2499381-3 DUP		**L1904582-6**						
COD		<10	<10	RPD-NA	mg/L	N/A	20	23-MAR-17
WG2499381-2 LCS								
COD			101.6		%		85-115	23-MAR-17
WG2499381-1 MB								
COD			<10		mg/L		10	23-MAR-17
WG2499381-4 MS		**L1904582-6**						
COD			100.7		%		75-125	23-MAR-17
CR-CR6-IC-WT	**Water**							

Quality Control Report

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 R3681499								
WG2497912-4 DUP		**WG2497912-3**						
Chromium, Hexavalent		0.0014	0.0015		mg/L	5.1	20	22-MAR-17
WG2497912-2 LCS								
Chromium, Hexavalent			99.6		%		80-120	22-MAR-17
WG2497912-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	22-MAR-17
WG2497912-5 MS		**WG2497912-3**						
Chromium, Hexavalent			99.3		%		70-130	22-MAR-17
EC-WT	**Water**							
Batch R3681589								
WG2497971-3 DUP		**WG2497971-2**						
Conductivity		3930	3930		umhos/cm	0.0	10	22-MAR-17
WG2497971-1 LCS								
Conductivity			100.6		%		90-110	22-MAR-17
WG2497971-4 MB								
Conductivity			<3.0		umhos/cm		3	22-MAR-17
F-IC-N-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Fluoride (F)		0.198	0.198		mg/L	0.1	20	22-MAR-17
WG2498239-2 LCS								
Fluoride (F)			101.7		%		90-110	22-MAR-17
WG2498239-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Fluoride (F)			91.2		%		75-125	22-MAR-17
HG-T-CVAA-WT	**Water**							
Batch R3681404								
WG2497958-3 DUP		**L1903235-1**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-MAR-17
WG2497958-2 LCS								
Mercury (Hg)-Total			96.8		%		80-120	22-MAR-17
WG2497958-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	22-MAR-17
WG2497958-4 MS		**L1903235-2**						
Mercury (Hg)-Total			93.9		%		70-130	22-MAR-17
MET-T-CCMS-WT	**Water**							

Quality Control Report

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 R3681135								
WG2497582-4 DUP		**WG2497582-3**						
Aluminum (Al)-Total		0.555	0.586		mg/L	5.5	20	21-MAR-17
Antimony (Sb)-Total		0.00025	0.00024		mg/L	4.7	20	21-MAR-17
Arsenic (As)-Total		0.00142	0.00142		mg/L	0.1	20	21-MAR-17
Barium (Ba)-Total		0.0761	0.0763		mg/L	0.2	20	21-MAR-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-MAR-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-MAR-17
Boron (B)-Total		0.054	0.052		mg/L	2.2	20	21-MAR-17
Cadmium (Cd)-Total		0.000019	0.000018		mg/L	6.6	20	21-MAR-17
Calcium (Ca)-Total		60.9	61.8		mg/L	1.5	20	21-MAR-17
Cobalt (Co)-Total		0.00042	0.00041		mg/L	1.7	20	21-MAR-17
Copper (Cu)-Total		0.0076	0.0076		mg/L	0.1	20	21-MAR-17
Iron (Fe)-Total		0.982	0.971		mg/L	1.1	20	21-MAR-17
Lead (Pb)-Total		0.00156	0.00151		mg/L	2.8	20	21-MAR-17
Magnesium (Mg)-Total		18.0	17.6		mg/L	2.6	20	21-MAR-17
Manganese (Mn)-Total		0.0607	0.0601		mg/L	1.1	20	21-MAR-17
Molybdenum (Mo)-Total		0.0103	0.00981		mg/L	4.5	20	21-MAR-17
Nickel (Ni)-Total		0.00268	0.00270		mg/L	0.6	20	21-MAR-17
Potassium (K)-Total		17.2	16.9		mg/L	1.8	20	21-MAR-17
Selenium (Se)-Total		0.000265	0.000237		mg/L	11	20	21-MAR-17
Silicon (Si)-Total		11.1	11.6		mg/L	4.1	20	21-MAR-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-MAR-17
Sodium (Na)-Total		173	170		mg/L	1.7	20	21-MAR-17
Strontium (Sr)-Total		3.80	3.85		mg/L	1.3	20	21-MAR-17
Thallium (Tl)-Total		0.000016	0.000013	J	mg/L	0.000003	0.00002	21-MAR-17
Tin (Sn)-Total		0.00012	0.00012		mg/L	2.8	20	21-MAR-17
Vanadium (V)-Total		0.00439	0.00439		mg/L	0.0	20	21-MAR-17
Zinc (Zn)-Total		0.0201	0.0203		mg/L	0.8	20	21-MAR-17
WG2497582-2 LCS								
Aluminum (Al)-Total			95.2		%		80-120	21-MAR-17
Antimony (Sb)-Total			96.9		%		80-120	21-MAR-17
Arsenic (As)-Total			94.6		%		80-120	21-MAR-17
Barium (Ba)-Total			96.9		%		80-120	21-MAR-17
Beryllium (Be)-Total			99.3		%		80-120	21-MAR-17

Quality Control Report

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 R3681135								
WG2497582-2 LCS								
Bismuth (Bi)-Total			97.5		%		80-120	21-MAR-17
Boron (B)-Total			99.9		%		80-120	21-MAR-17
Cadmium (Cd)-Total			96.7		%		80-120	21-MAR-17
Calcium (Ca)-Total			98.4		%		80-120	21-MAR-17
Cobalt (Co)-Total			93.4		%		80-120	21-MAR-17
Copper (Cu)-Total			92.4		%		80-120	21-MAR-17
Iron (Fe)-Total			92.6		%		80-120	21-MAR-17
Lead (Pb)-Total			98.4		%		80-120	21-MAR-17
Magnesium (Mg)-Total			96.8		%		80-120	21-MAR-17
Manganese (Mn)-Total			95.3		%		80-120	21-MAR-17
Molybdenum (Mo)-Total			91.9		%		80-120	21-MAR-17
Nickel (Ni)-Total			93.2		%		80-120	21-MAR-17
Potassium (K)-Total			95.4		%		80-120	21-MAR-17
Selenium (Se)-Total			92.8		%		80-120	21-MAR-17
Silicon (Si)-Total			102.8		%		80-120	22-MAR-17
Silver (Ag)-Total			98.9		%		80-120	21-MAR-17
Sodium (Na)-Total			96.6		%		80-120	21-MAR-17
Strontium (Sr)-Total			97.7		%		80-120	21-MAR-17
Thallium (Tl)-Total			93.3		%		80-120	21-MAR-17
Tin (Sn)-Total			92.8		%		80-120	21-MAR-17
Vanadium (V)-Total			94.7		%		80-120	21-MAR-17
Zinc (Zn)-Total			89.5		%		80-120	21-MAR-17
WG2497582-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	21-MAR-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	21-MAR-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	21-MAR-17
Boron (B)-Total			<0.010		mg/L		0.01	21-MAR-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	21-MAR-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	21-MAR-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	21-MAR-17

Quality Control Report

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 R3681135								
WG2497582-1 MB								
Iron (Fe)-Total			<0.050		mg/L		0.05	21-MAR-17
Lead (Pb)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	21-MAR-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	21-MAR-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	21-MAR-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-MAR-17
Potassium (K)-Total			<0.050		mg/L		0.05	21-MAR-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	21-MAR-17
Silicon (Si)-Total			<0.10		mg/L		0.1	21-MAR-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	21-MAR-17
Sodium (Na)-Total			<0.50		mg/L		0.5	21-MAR-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	21-MAR-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	21-MAR-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	21-MAR-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	21-MAR-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-MAR-17
WG2497582-5 MS		**WG2497582-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	21-MAR-17
Antimony (Sb)-Total			101.2		%		70-130	21-MAR-17
Arsenic (As)-Total			100.9		%		70-130	21-MAR-17
Barium (Ba)-Total			N/A	MS-B	%		-	21-MAR-17
Beryllium (Be)-Total			101.1		%		70-130	21-MAR-17
Bismuth (Bi)-Total			91.2		%		70-130	21-MAR-17
Boron (B)-Total			N/A	MS-B	%		-	21-MAR-17
Cadmium (Cd)-Total			100.6		%		70-130	21-MAR-17
Calcium (Ca)-Total			N/A	MS-B	%		-	21-MAR-17
Cobalt (Co)-Total			97.7		%		70-130	21-MAR-17
Copper (Cu)-Total			92.3		%		70-130	21-MAR-17
Iron (Fe)-Total			N/A	MS-B	%		-	21-MAR-17
Lead (Pb)-Total			93.1		%		70-130	21-MAR-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	21-MAR-17
Manganese (Mn)-Total			N/A	MS-B	%		-	21-MAR-17
Molybdenum (Mo)-Total			93.6		%		70-130	21-MAR-17
Nickel (Ni)-Total			96.4		%		70-130	21-MAR-17

Quality Control Report

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 R3681135								
WG2497582-5 MS		**WG2497582-3**						
Potassium (K)-Total			N/A	MS-B	%		-	21-MAR-17
Selenium (Se)-Total			93.2		%		70-130	22-MAR-17
Silicon (Si)-Total			N/A	MS-B	%		-	21-MAR-17
Silver (Ag)-Total			94.9		%		70-130	21-MAR-17
Sodium (Na)-Total			N/A	MS-B	%		-	21-MAR-17
Strontium (Sr)-Total			N/A	MS-B	%		-	21-MAR-17
Thallium (Tl)-Total			89.1		%		70-130	21-MAR-17
Tin (Sn)-Total			96.5		%		70-130	21-MAR-17
Vanadium (V)-Total			104.4		%		70-130	21-MAR-17
Zinc (Zn)-Total			91.2		%		70-130	21-MAR-17
NH3-WT	**Water**							
Batch R3681475								
WG2498021-3 DUP		**L1902990-1**						
Ammonia, Total (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	22-MAR-17
WG2498021-2 LCS								
Ammonia, Total (as N)			99.7		%		85-115	22-MAR-17
WG2498021-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	22-MAR-17
WG2498021-4 MS		**L1902990-1**						
Ammonia, Total (as N)			99.3		%		75-125	22-MAR-17
NO2-IC-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	22-MAR-17
WG2498239-2 LCS								
Nitrite (as N)			102.0		%		70-130	22-MAR-17
WG2498239-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Nitrite (as N)			89.6		%		70-130	22-MAR-17
NO3-IC-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	22-MAR-17
WG2498239-2 LCS								

Quality Control Report

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 R3682895								
WG2498239-2 LCS								
Nitrate (as N)			100.8		%		70-130	22-MAR-17
WG2498239-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Nitrate (as N)			87.0		%		70-130	22-MAR-17
P-T-COL-WT	**Water**							
Batch R3681773								
WG2498047-3 DUP		**L1903065-1**						
Phosphorus, Total		0.0312	0.0347		mg/L	11	20	23-MAR-17
WG2498047-2 LCS								
Phosphorus, Total			103.6		%		80-120	23-MAR-17
WG2498047-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	23-MAR-17
WG2498047-4 MS		**L1903065-1**						
Phosphorus, Total			89.8		%		70-130	23-MAR-17
PH-WT	**Water**							
Batch R3681589								
WG2497971-3 DUP		**WG2497971-2**						
pH		6.65	6.65	J	pH units	0.00	0.2	22-MAR-17
WG2497971-1 LCS								
pH			6.99		pH units		6.9-7.1	22-MAR-17
PHENOLS-4AAP-WT	**Water**							
Batch R3684143								
WG2498957-3 DUP		**L1904035-1**						
Phenols (4AAP)		0.041	0.042		mg/L	2.4	20	23-MAR-17
WG2498957-2 LCS								
Phenols (4AAP)			108.1		%		85-115	23-MAR-17
WG2498957-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	23-MAR-17
WG2498957-4 MS		**L1904035-1**						
Phenols (4AAP)			N/A	MS-B	%		-	23-MAR-17
SO4-IC-N-WT	**Water**							
Batch R3682895								
WG2498239-4 DUP		**L1903204-1**						
Sulfate (SO4)		226	226		mg/L	0.0	20	22-MAR-17
WG2498239-2 LCS								

Quality Control Report

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 R3682895								
WG2498239-2 LCS								
Sulfate (SO4)			101.8		%		90-110	22-MAR-17
WG2498239-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-MAR-17
WG2498239-5 MS		**L1903204-1**						
Sulfate (SO4)			N/A	MS-B	%		-	22-MAR-17
SOLIDS-TDS-WT	**Water**							
Batch R3685435								
WG2498975-3 DUP		**L1903204-1**						
Total Dissolved Solids		967	968		mg/L	0.1	20	23-MAR-17
WG2498975-2 LCS								
Total Dissolved Solids			100.9		%		85-115	23-MAR-17
WG2498975-1 MB								
Total Dissolved Solids			<10		mg/L		10	23-MAR-17
SOLIDS-TSS-WT	**Water**							
Batch R3684337								
WG2498722-3 DUP		**L1904054-1**						
Total Suspended Solids		3850	3950		mg/L	2.6	20	24-MAR-17
WG2498722-2 LCS								
Total Suspended Solids			96.8		%		85-115	24-MAR-17
WG2498722-1 MB								
Total Suspended Solids			<2.0		mg/L		2	24-MAR-17
TKN-WT	**Water**							
Batch R3682747								
WG2497926-3 DUP		**L1902990-1**						
Total Kjeldahl Nitrogen		0.97	0.81		mg/L	18	20	22-MAR-17
WG2497926-2 LCS								
Total Kjeldahl Nitrogen			104.1		%		75-125	22-MAR-17
WG2497926-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	22-MAR-17
WG2497926-4 MS		**L1902990-1**						
Total Kjeldahl Nitrogen			105.0		%		70-130	22-MAR-17
VOC-ROU-HS-WT	**Water**							
Batch R3681178								
WG2494204-1 LCS								
1,1,1,2-Tetrachloroethane			95.7		%		70-130	22-MAR-17
1,1,2,2-Tetrachloroethane			96.2		%		70-130	22-MAR-17

Quality Control Report

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 R3681178								
WG2494204-1 LCS								
1,1,1-Trichloroethane			101.7		%		70-130	22-MAR-17
1,1,2-Trichloroethane			99.6		%		70-130	22-MAR-17
1,2-Dibromoethane			97.1		%		70-130	22-MAR-17
1,1-Dichloroethane			101.6		%		70-130	22-MAR-17
1,1-Dichloroethylene			100.8		%		70-130	22-MAR-17
1,2-Dichlorobenzene			98.9		%		70-130	22-MAR-17
1,2-Dichloroethane			103.4		%		70-130	22-MAR-17
1,2-Dichloropropane			103.1		%		70-130	22-MAR-17
1,3-Dichlorobenzene			97.9		%		70-130	22-MAR-17
1,4-Dichlorobenzene			99.3		%		70-130	22-MAR-17
Acetone			115.9		%		60-140	22-MAR-17
Benzene			104.6		%		70-130	22-MAR-17
Bromodichloromethane			99.6		%		70-130	22-MAR-17
Bromoform			99.5		%		70-130	22-MAR-17
Bromomethane			114.2		%		60-140	22-MAR-17
Carbon tetrachloride			100.2		%		70-130	22-MAR-17
Chlorobenzene			100.3		%		70-130	22-MAR-17
Chloroethane			111.9		%		70-130	22-MAR-17
Chloroform			103.5		%		70-130	22-MAR-17
cis-1,2-Dichloroethylene			107.3		%		70-130	22-MAR-17
cis-1,3-Dichloropropene			99.4		%		70-130	22-MAR-17
Dibromochloromethane			101.6		%		70-130	22-MAR-17
Dichlorodifluoromethane			112.5		%		50-140	22-MAR-17
Dichloromethane			106.0		%		70-130	22-MAR-17
Ethylbenzene			90.7		%		70-130	22-MAR-17
m+p-Xylenes			94.9		%		70-130	22-MAR-17
Methyl Ethyl Ketone			105.7		%		60-140	22-MAR-17
Methyl Isobutyl Ketone			88.4		%		50-150	22-MAR-17
n-Hexane			113.7		%		70-130	22-MAR-17
MTBE			100.4		%		70-130	22-MAR-17
o-Xylene			90.5		%		70-130	22-MAR-17
Styrene			95.1		%		70-130	22-MAR-17
Tetrachloroethylene			97.8		%		70-130	22-MAR-17

Quality Control Report

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 R3681178								
WG2494204-1 LCS								
Toluene			94.7		%		70-130	22-MAR-17
trans-1,2-Dichloroethylene			104.0		%		70-130	22-MAR-17
trans-1,3-Dichloropropene			95.9		%		70-130	22-MAR-17
Trichloroethylene			101.0		%		70-130	22-MAR-17
Trichlorofluoromethane			112.9		%		60-140	22-MAR-17
Vinyl chloride			108.6		%		60-140	22-MAR-17
WG2494204-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	22-MAR-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	22-MAR-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	22-MAR-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	22-MAR-17
1,2-Dibromoethane			<0.20		ug/L		0.2	22-MAR-17
1,1-Dichloroethane			<0.50		ug/L		0.5	22-MAR-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	22-MAR-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	22-MAR-17
1,2-Dichloroethane			<0.50		ug/L		0.5	22-MAR-17
1,2-Dichloropropane			<0.50		ug/L		0.5	22-MAR-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	22-MAR-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	22-MAR-17
Acetone			<20		ug/L		20	22-MAR-17
Benzene			<0.50		ug/L		0.5	22-MAR-17
Bromodichloromethane			<1.0		ug/L		1	22-MAR-17
Bromoform			<1.0		ug/L		1	22-MAR-17
Bromomethane			<0.50		ug/L		0.5	22-MAR-17
Carbon tetrachloride			<0.50		ug/L		0.5	22-MAR-17
Chlorobenzene			<0.50		ug/L		0.5	22-MAR-17
Chloroethane			<1.0		ug/L		1	22-MAR-17
Chloroform			<1.0		ug/L		1	22-MAR-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	22-MAR-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	22-MAR-17
Dibromochloromethane			<1.0		ug/L		1	22-MAR-17
Dichlorodifluoromethane			<1.0		ug/L		1	22-MAR-17
Dichloromethane			<2.0		ug/L		2	22-MAR-17
Ethylbenzene			<0.50		ug/L		0.5	22-MAR-17

Quality Control Report

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 R3681178								
WG2494204-2 MB								
m+p-Xylenes			<1.0		ug/L		1	22-MAR-17
Methyl Ethyl Ketone			<20		ug/L		20	22-MAR-17
Methyl Isobutyl Ketone			<20		ug/L		20	22-MAR-17
n-Hexane			<0.50		ug/L		0.5	22-MAR-17
MTBE			<0.50		ug/L		0.5	22-MAR-17
o-Xylene			<0.50		ug/L		0.5	22-MAR-17
Styrene			<0.50		ug/L		0.5	22-MAR-17
Tetrachloroethylene			<0.50		ug/L		0.5	22-MAR-17
Toluene			<0.50		ug/L		0.5	22-MAR-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	22-MAR-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	22-MAR-17
Trichloroethylene			<0.50		ug/L		0.5	22-MAR-17
Trichlorofluoromethane			<1.0		ug/L		1	22-MAR-17
Vinyl chloride			<0.50		ug/L		0.5	22-MAR-17
Surrogate: 1,4-Difluorobenzene			102.9		%		70-130	22-MAR-17
Surrogate: 4-Bromofluorobenzene			99.6		%		70-130	22-MAR-17

Quality Control Report

Workorder: L1903262 Report Date: 27-MAR-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1903262-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☑ 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:	73506479	Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1903262 SH 21B

ALS Contact: L.Ermeta **Sampler**: A Tobin

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
	EQ POND	20/03/17	11:00	water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		3	7.63	
	West Retention Pond	20/03/17	11:15	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		3	7.86	
	East Retention Pond	20/03/17	11:30	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	–		3	8.08	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

Please fill in Client Supplied temperature and pH for Unionized NH3 calculation

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations Yes	☐ No ☐
Ice packs Yes	☐ No ☐	Custody seal intact Yes	☐ No ☐
Cooling Initiated	☐		

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
A Tobin	17 March 2017	13:00					21/3/17	9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0206 v08 Front04 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: 21-MAR-17
Report Date: 23-MAR-17 09:04 (MT)
Version: FINAL

Client Phone: 519-884-7780

Certificate of Analysis

Lab Work Order #: L1903350

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

LAURA ERMETA
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1903350-1 EQ POND Sampled By: R. TOBIN on 20-MAR-17 @ 11:00 Matrix: WATER							
Microtox Physical Tests							
Turbidity	N/A				22-MAR-17	22-MAR-17	R3681217
Colour	Colourless				22-MAR-17	22-MAR-17	R3681217
Clarification	None				22-MAR-17	22-MAR-17	R3681217
Initial pH	8.0		0.10	pH	22-MAR-17	22-MAR-17	R3681217
Final pH	8.0		0.10	pH	22-MAR-17	22-MAR-17	R3681217
Lab Treatment	None				22-MAR-17	22-MAR-17	R3681217
Microtox Original							
EC50 (15min) Original	>100		1.0	%	22-MAR-17	22-MAR-17	R3681217
EC20 (15min) Original	>100		1.0	%	22-MAR-17	22-MAR-17	R3681217
EC50 (5min) Original	>100		1.0	%	22-MAR-17	22-MAR-17	R3681217
EC20 (5min) Original	>100		1.0	%	22-MAR-17	22-MAR-17	R3681217
Interpretation Original	NON TOXIC				22-MAR-17	22-MAR-17	R3681217

* 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-ED	Water	Microtox Original	ERCB Directive 050
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-ED	Water	Microtox Physical Tests	ERCB Directive 050

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, 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: L1903350 Report Date: 23-MAR-17

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-ED	**Water**							
Batch R3681217								
WG2498041-2 CRM		**PHENOL_ED**						
EC50 (5min) Original			15.7		mg/L		13-26	22-MAR-17
WG2498041-3 CRM		**PHENOL_ED**						
EC50 (5min) Original			17.3		mg/L		13-26	22-MAR-17
WG2498041-4 DUP		**L1903350-1**						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		22-MAR-17
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		22-MAR-17
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		22-MAR-17
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		22-MAR-17
WG2498041-1 MB								
EC50 (15min) Original			PASS					22-MAR-17
EC20 (15min) Original			PASS					22-MAR-17
EC50 (5min) Original			PASS					22-MAR-17
EC20 (5min) Original			PASS					22-MAR-17

Quality Control Report

Workorder: L1903350 Report Date: 23-MAR-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1903350-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-7780	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2: See PO

Turnaround Time (TAT) (h Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	
	Copy of Invoice with Report ☐ Yes ☐ No	
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2:

Project Information			
ALS Quote #:			
Job #:	44985		
PO / AFE:	73503080		
LSD:			

Oil and Gas Required Fields (client use)

Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: L.Ermeta Sampler: R Tobin

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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
	EQ POND	20/03/17	11:00	Water	✓			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No
Are samples for human drinking water use? ☐ Yes ☐ 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 ☐ SIF Observations Yes ☐ No ☑
Ice packs Yes ☑ No ☐ Custody seal intact Yes ☑ No ☐
Cooling Initiated ☑

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
4					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
R Tobin	March 22/17	13:00		03/21	1:30 pm			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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: 09-MAY-17
Report Date: 18-MAY-17 08:42 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1922965

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Laura Ermeta
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-1 EQ POND DISCHARGE Sampled By: CLIENT on 08-MAY-17 @ 12:15 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.87		0.10	pH		16-MAY-17	R3724139
Temperature, Client	10.0		-50	Deg. C		16-MAY-17	R3724139
Physical Tests							
Conductivity	769		3.0	umhos/cm		09-MAY-17	R3717597
Hardness (as CaCO3)	295	HTC	10	mg/L		10-MAY-17	
pH	8.16		0.10	pH units		09-MAY-17	R3717597
Total Suspended Solids	7.5		2.0	mg/L	11-MAY-17	12-MAY-17	R3719397
Total Dissolved Solids	450	DLDS	20	mg/L		09-MAY-17	R3717938
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	149		10	mg/L		11-MAY-17	R3721877
Unionized ammonia	0.00232		0.00033	mg/L		16-MAY-17	
Ammonia, Total (as N)	0.141		0.020	mg/L		11-MAY-17	R3718741
Bromide (Br)	0.35		0.10	mg/L		11-MAY-17	R3719459
Chloride (Cl)	56.5		0.50	mg/L		11-MAY-17	R3719459
Fluoride (F)	0.490		0.020	mg/L		11-MAY-17	R3719459
Nitrate (as N)	0.254		0.020	mg/L		11-MAY-17	R3719459
Nitrite (as N)	<0.010		0.010	mg/L		11-MAY-17	R3719459
Total Kjeldahl Nitrogen	0.50		0.15	mg/L	11-MAY-17	11-MAY-17	R3718823
Phosphorus, Total	0.0188		0.0030	mg/L	12-MAY-17	12-MAY-17	R3719517
Sulfate (SO4)	153		0.30	mg/L		11-MAY-17	R3719459
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		15-MAY-17	R3722005
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.7		1.0	mg/L		09-MAY-17	R3717586
Total Metals							
Aluminum (Al)-Total	0.432		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Antimony (Sb)-Total	0.00040		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Arsenic (As)-Total	0.00106		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Barium (Ba)-Total	0.0430		0.00020	mg/L	09-MAY-17	09-MAY-17	R3717608
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Boron (B)-Total	0.141		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Cadmium (Cd)-Total	0.000036		0.000010	mg/L	09-MAY-17	09-MAY-17	R3717608
Calcium (Ca)-Total	79.9		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Cobalt (Co)-Total	0.00039		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Copper (Cu)-Total	0.0014		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Iron (Fe)-Total	0.362		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Lead (Pb)-Total	0.00030		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Magnesium (Mg)-Total	23.1		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Manganese (Mn)-Total	0.0402		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-MAY-17	R3717879
Molybdenum (Mo)-Total	0.0391		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608

* 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
L1922965-1 EQ POND DISCHARGE Sampled By: CLIENT on 08-MAY-17 @ 12:15 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00304		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Potassium (K)-Total	4.45		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Selenium (Se)-Total	0.00147		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Silicon (Si)-Total	2.46		0.10	mg/L	09-MAY-17	09-MAY-17	R3717608
Silver (Ag)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Sodium (Na)-Total	35.5		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Strontium (Sr)-Total	0.587		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Thallium (Tl)-Total	0.000021		0.000010	mg/L	09-MAY-17	09-MAY-17	R3717608
Tin (Sn)-Total	<0.00010		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Vanadium (V)-Total	0.00108		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	09-MAY-17	09-MAY-17	R3717608
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		09-MAY-17	R3717604
Aggregate Organics							
COD	14		10	mg/L		14-MAY-17	R3721444
Phenols (4AAP)	0.0026		0.0010	mg/L		16-MAY-17	R3725333
Volatile Organic Compounds							
Acetone	<20		20	ug/L		11-MAY-17	R3718697
Benzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Bromodichloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromoform	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromomethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Carbon tetrachloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
Chlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dibromochloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroform	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,2-Dibromoethane	<0.20		0.20	ug/L		11-MAY-17	R3718697
1,2-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,3-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,4-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichlorodifluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,1-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,2-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichloromethane	<2.0		2.0	ug/L		11-MAY-17	R3718697
1,2-Dichloropropane	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Ethylbenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-1 EQ POND DISCHARGE Sampled By: CLIENT on 08-MAY-17 @ 12:15 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Methyl Ethyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
Methyl Isobutyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
MTBE	<0.50		0.50	ug/L		11-MAY-17	R3718697
Styrene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Tetrachloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Toluene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,1-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichlorofluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Vinyl chloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
o-Xylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
m+p-Xylenes	<1.0		1.0	ug/L		11-MAY-17	R3718697
Xylenes (Total)	<1.1		1.1	ug/L		11-MAY-17	
Surrogate: 4-Bromofluorobenzene	97.2		70-130	%		11-MAY-17	R3718697
Surrogate: 1,4-Difluorobenzene	101.9		70-130	%		11-MAY-17	R3718697
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		11-MAY-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719193
Surrogate: Phenol d5	38.1		30-130	%	11-MAY-17	12-MAY-17	R3719193
Surrogate: 2,4,6-Tribromophenol	87.5		40-150	%	11-MAY-17	12-MAY-17	R3719193
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Acenaphthylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(a)anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(a)pyrene	<0.050		0.050	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(b)fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(ghi)perylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(k)fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
4-Chloroaniline	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2-Chlorophenol	<0.30		0.30	ug/L	11-MAY-17	12-MAY-17	R3719108
Chrysene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
1,2-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
1,3-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
1,4-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-1 EQ POND DISCHARGE Sampled By: CLIENT on 08-MAY-17 @ 12:15 Matrix: WATER							
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dichlorophenol	<0.30		0.30	ug/L	11-MAY-17	12-MAY-17	R3719108
Diethylphthalate	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Dimethylphthalate	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dimethylphenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dinitrophenol	<1.0		1.0	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dinitrotoluene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,6-Dinitrotoluene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	11-MAY-17	12-MAY-17	R3719108
Fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Fluorene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Hexachlorobenzene	<0.040		0.040	ug/L	11-MAY-17	12-MAY-17	R3719108
Hexachlorobutadiene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
1-Methylnaphthalene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2-Methylnaphthalene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Naphthalene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Pentachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
Perylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Phenanthrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Pyrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
Surrogate: 2-Fluorobiphenyl	81.7		40-130	%	11-MAY-17	12-MAY-17	R3719108
Surrogate: Nitrobenzene d5	83.8		50-130	%	11-MAY-17	12-MAY-17	R3719108
Surrogate: p-Terphenyl d14	95.4		40-130	%	11-MAY-17	12-MAY-17	R3719108
L1922965-2 WEST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.88		0.10	pH		16-MAY-17	R3724139
Temperature, Client	10.0		-50	Deg. C		16-MAY-17	R3724139
Physical Tests							
Conductivity	766		3.0	umhos/cm		09-MAY-17	R3717597
Hardness (as CaCO3)	298	HTC	10	mg/L		10-MAY-17	
pH	8.19		0.10	pH units		09-MAY-17	R3717597
Total Suspended Solids	8.2		2.0	mg/L	11-MAY-17	12-MAY-17	R3719397
Total Dissolved Solids	461	DLDS	20	mg/L		09-MAY-17	R3717938
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
L1922965-2 WEST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:30 Matrix: WATER							
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	152		10	mg/L		11-MAY-17	R3721877
Unionized ammonia	0.00276		0.00034	mg/L		16-MAY-17	
Ammonia, Total (as N)	0.163		0.020	mg/L		11-MAY-17	R3718741
Bromide (Br)	0.31		0.10	mg/L		11-MAY-17	R3719459
Chloride (Cl)	55.9		0.50	mg/L		11-MAY-17	R3719459
Fluoride (F)	0.500		0.020	mg/L		11-MAY-17	R3719459
Nitrate (as N)	0.147		0.020	mg/L		11-MAY-17	R3719459
Nitrite (as N)	<0.010		0.010	mg/L		11-MAY-17	R3719459
Total Kjeldahl Nitrogen	0.61		0.15	mg/L	12-MAY-17	12-MAY-17	R3719554
Phosphorus, Total	0.0320		0.0030	mg/L	12-MAY-17	14-MAY-17	R3721435
Sulfate (SO4)	152		0.30	mg/L		11-MAY-17	R3719459
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		15-MAY-17	R3722005
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.8		1.0	mg/L		10-MAY-17	R3721425
Total Metals							
Aluminum (Al)-Total	0.528		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Antimony (Sb)-Total	0.00042		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Arsenic (As)-Total	0.00124		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Barium (Ba)-Total	0.0448		0.00020	mg/L	09-MAY-17	09-MAY-17	R3717608
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Boron (B)-Total	0.148		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Cadmium (Cd)-Total	0.000038		0.000010	mg/L	09-MAY-17	09-MAY-17	R3717608
Calcium (Ca)-Total	81.1		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Cobalt (Co)-Total	0.00050		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Copper (Cu)-Total	0.0018		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Iron (Fe)-Total	0.456		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Lead (Pb)-Total	0.00037		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Magnesium (Mg)-Total	23.1		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Manganese (Mn)-Total	0.0568		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-MAY-17	R3717879
Molybdenum (Mo)-Total	0.0397		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Nickel (Ni)-Total	0.00323		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Potassium (K)-Total	4.60		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Selenium (Se)-Total	0.00163		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Silicon (Si)-Total	2.69		0.10	mg/L	09-MAY-17	09-MAY-17	R3717608
Silver (Ag)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Sodium (Na)-Total	35.9		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Strontium (Sr)-Total	0.599		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Thallium (Tl)-Total	0.000020		0.000010	mg/L	09-MAY-17	09-MAY-17	R3717608
Tin (Sn)-Total	<0.00010		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-2 WEST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:30 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	0.00129		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	09-MAY-17	09-MAY-17	R3717608
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		09-MAY-17	R3717604
Aggregate Organics							
COD	15		10	mg/L		14-MAY-17	R3721444
Phenols (4AAP)	0.0036		0.0010	mg/L		16-MAY-17	R3725333
Volatile Organic Compounds							
Acetone	<20		20	ug/L		11-MAY-17	R3718697
Benzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Bromodichloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromoform	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromomethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Carbon tetrachloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
Chlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dibromochloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroform	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,2-Dibromoethane	<0.20		0.20	ug/L		11-MAY-17	R3718697
1,2-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,3-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,4-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichlorodifluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,1-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,2-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichloromethane	<2.0		2.0	ug/L		11-MAY-17	R3718697
1,2-Dichloropropane	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Ethylbenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
n-Hexane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Methyl Ethyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
Methyl Isobutyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
MTBE	<0.50		0.50	ug/L		11-MAY-17	R3718697
Styrene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Tetrachloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Toluene	<0.50		0.50	ug/L		11-MAY-17	R3718697

* 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
L1922965-2 WEST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:30 Matrix: WATER							
Volatile Organic Compounds							
1,1,1-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichlorofluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Vinyl chloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
o-Xylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
m+p-Xylenes	<1.0		1.0	ug/L		11-MAY-17	R3718697
Xylenes (Total)	<1.1		1.1	ug/L		11-MAY-17	
Surrogate: 4-Bromofluorobenzene	96.4		70-130	%		11-MAY-17	R3718697
Surrogate: 1,4-Difluorobenzene	102.1		70-130	%		11-MAY-17	R3718697
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		11-MAY-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719193
Surrogate: Phenol d5	40.6		30-130	%	11-MAY-17	12-MAY-17	R3719193
Surrogate: 2,4,6-Tribromophenol	93.3		40-150	%	11-MAY-17	12-MAY-17	R3719193
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Acenaphthylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(a)anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(a)pyrene	<0.050		0.050	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(b)fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(ghi)perylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Benzo(k)fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
4-Chloroaniline	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2-Chlorophenol	<0.30		0.30	ug/L	11-MAY-17	12-MAY-17	R3719108
Chrysene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
1,2-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
1,3-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
1,4-Dichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dichlorophenol	<0.30		0.30	ug/L	11-MAY-17	12-MAY-17	R3719108
Diethylphthalate	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Dimethylphthalate	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dimethylphenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dinitrophenol	<1.0		1.0	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4-Dinitrotoluene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,6-Dinitrotoluene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	11-MAY-17	12-MAY-17	R3719108

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-2 WEST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:30 Matrix: WATER							
Semi-Volatile Organics							
Fluoranthene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Fluorene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Hexachlorobenzene	<0.040		0.040	ug/L	11-MAY-17	12-MAY-17	R3719108
Hexachlorobutadiene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
1-Methylnaphthalene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2-Methylnaphthalene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
Naphthalene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Pentachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
Perylene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Phenanthrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
Pyrene	<0.20		0.20	ug/L	11-MAY-17	12-MAY-17	R3719108
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	11-MAY-17	12-MAY-17	R3719108
Surrogate: 2-Fluorobiphenyl	90.3		40-130	%	11-MAY-17	12-MAY-17	R3719108
Surrogate: Nitrobenzene d5	91.0		50-130	%	11-MAY-17	12-MAY-17	R3719108
Surrogate: p-Terphenyl d14	101.5		40-130	%	11-MAY-17	12-MAY-17	R3719108
L1922965-3 EAST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:45 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.77		0.10	pH		16-MAY-17	R3724139
Temperature, Client	10.0		-50	Deg. C		16-MAY-17	R3724139
Physical Tests							
Conductivity	723		3.0	umhos/cm		09-MAY-17	R3717597
Hardness (as CaCO3)	283	HTC	10	mg/L		10-MAY-17	
pH	8.14		0.10	pH units		09-MAY-17	R3717597
Total Suspended Solids	14.0		2.0	mg/L	11-MAY-17	12-MAY-17	R3719397
Total Dissolved Solids	459	DLDS	20	mg/L		09-MAY-17	R3717938
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	126		10	mg/L		11-MAY-17	R3721877
Unionized ammonia	0.00142		0.00026	mg/L		16-MAY-17	
Ammonia, Total (as N)	0.108		0.020	mg/L		11-MAY-17	R3718741
Bromide (Br)	0.47		0.10	mg/L		11-MAY-17	R3719459
Chloride (Cl)	40.7		0.50	mg/L		11-MAY-17	R3719459
Fluoride (F)	0.609		0.020	mg/L		11-MAY-17	R3719459
Nitrate (as N)	0.114		0.020	mg/L		11-MAY-17	R3719459
Nitrite (as N)	<0.010		0.010	mg/L		11-MAY-17	R3719459
Total Kjeldahl Nitrogen	<1.5	DLM	1.5	mg/L	15-MAY-17	15-MAY-17	R3723012

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922965-3 EAST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:45 Matrix: WATER							
Anions and Nutrients							
Phosphorus, Total	0.0372		0.0030	mg/L	17-MAY-17	18-MAY-17	R3726272
Sulfate (SO4)	175		0.30	mg/L		11-MAY-17	R3719459
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		15-MAY-17	R3722005
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.8		1.0	mg/L		10-MAY-17	R3721425
Total Metals							
Aluminum (Al)-Total	1.16		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Antimony (Sb)-Total	0.00055		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Arsenic (As)-Total	0.00133		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Barium (Ba)-Total	0.0451		0.00020	mg/L	09-MAY-17	09-MAY-17	R3717608
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Boron (B)-Total	0.101		0.010	mg/L	09-MAY-17	09-MAY-17	R3717608
Cadmium (Cd)-Total	<0.000090	DLM	0.000090	mg/L	09-MAY-17	09-MAY-17	R3717608
Calcium (Ca)-Total	76.5		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Cobalt (Co)-Total	0.00087		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Copper (Cu)-Total	0.0027		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Iron (Fe)-Total	1.17		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Lead (Pb)-Total	0.00177		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Magnesium (Mg)-Total	22.4		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Manganese (Mn)-Total	0.0542		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-MAY-17	R3717879
Molybdenum (Mo)-Total	0.0663		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Nickel (Ni)-Total	0.00364		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Potassium (K)-Total	4.94		0.050	mg/L	09-MAY-17	09-MAY-17	R3717608
Selenium (Se)-Total	0.00270		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Silicon (Si)-Total	3.81		0.10	mg/L	09-MAY-17	09-MAY-17	R3717608
Silver (Ag)-Total	<0.000050		0.000050	mg/L	09-MAY-17	09-MAY-17	R3717608
Sodium (Na)-Total	28.9		0.50	mg/L	09-MAY-17	09-MAY-17	R3717608
Strontium (Sr)-Total	0.680		0.0010	mg/L	09-MAY-17	09-MAY-17	R3717608
Thallium (Tl)-Total	0.000045		0.000010	mg/L	09-MAY-17	09-MAY-17	R3717608
Tin (Sn)-Total	0.00013		0.00010	mg/L	09-MAY-17	09-MAY-17	R3717608
Vanadium (V)-Total	0.00263		0.00050	mg/L	09-MAY-17	09-MAY-17	R3717608
Zinc (Zn)-Total	0.0148		0.0030	mg/L	09-MAY-17	09-MAY-17	R3717608
Speciated Metals							
Chromium, Hexavalent	0.0015		0.0010	mg/L		09-MAY-17	R3717604
Aggregate Organics							
COD	23		10	mg/L		14-MAY-17	R3721444
Phenols (4AAP)	0.0024		0.0010	mg/L		16-MAY-17	R3725333
Volatile Organic Compounds							
Acetone	<20		20	ug/L		11-MAY-17	R3718697

* 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
L1922965-3 EAST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:45 Matrix: WATER							
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Bromodichloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromoform	<1.0		1.0	ug/L		11-MAY-17	R3718697
Bromomethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Carbon tetrachloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
Chlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dibromochloromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Chloroform	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,2-Dibromoethane	<0.20		0.20	ug/L		11-MAY-17	R3718697
1,2-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,3-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,4-Dichlorobenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichlorodifluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
1,1-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,2-Dichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Dichloromethane	<2.0		2.0	ug/L		11-MAY-17	R3718697
1,2-Dichloropropane	<0.50		0.50	ug/L		11-MAY-17	R3718697
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Ethylbenzene	<0.50		0.50	ug/L		11-MAY-17	R3718697
n-Hexane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Methyl Ethyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
Methyl Isobutyl Ketone	<20		20	ug/L		11-MAY-17	R3718697
MTBE	<0.50		0.50	ug/L		11-MAY-17	R3718697
Styrene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Tetrachloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Toluene	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,1-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
1,1,2-Trichloroethane	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichloroethylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
Trichlorofluoromethane	<1.0		1.0	ug/L		11-MAY-17	R3718697
Vinyl chloride	<0.50		0.50	ug/L		11-MAY-17	R3718697
o-Xylene	<0.50		0.50	ug/L		11-MAY-17	R3718697
m+p-Xylenes	<1.0		1.0	ug/L		11-MAY-17	R3718697
Xylenes (Total)	<1.1		1.1	ug/L		11-MAY-17	

* 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
L1922965-3 EAST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:45 Matrix: WATER							
Volatile Organic Compounds							
Surrogate: 4-Bromofluorobenzene	96.1		70-130	%		11-MAY-17	R3718697
Surrogate: 1,4-Difluorobenzene	102.1		70-130	%		11-MAY-17	R3718697
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		11-MAY-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724264
Surrogate: Phenol d5	38.4		30-130	%	15-MAY-17	16-MAY-17	R3724264
Surrogate: 2,4,6-Tribromophenol	89.2		40-150	%	15-MAY-17	16-MAY-17	R3724264
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Acenaphthylene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Anthracene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Benzo(a)anthracene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Benzo(a)pyrene	<0.050		0.050	ug/L	15-MAY-17	16-MAY-17	R3724463
Benzo(b)fluoranthene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Benzo(ghi)perylene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Benzo(k)fluoranthene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
4-Chloroaniline	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
2-Chlorophenol	<0.30		0.30	ug/L	15-MAY-17	16-MAY-17	R3724463
Chrysene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
1,2-Dichlorobenzene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
1,3-Dichlorobenzene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
1,4-Dichlorobenzene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4-Dichlorophenol	<0.30		0.30	ug/L	15-MAY-17	16-MAY-17	R3724463
Diethylphthalate	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Dimethylphthalate	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4-Dimethylphenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4-Dinitrophenol	<1.0		1.0	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4-Dinitrotoluene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
2,6-Dinitrotoluene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	15-MAY-17	16-MAY-17	R3724463
Fluoranthene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Fluorene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Hexachlorobenzene	<0.040		0.040	ug/L	15-MAY-17	16-MAY-17	R3724463
Hexachlorobutadiene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
1-Methylnaphthalene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
2-Methylnaphthalene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
Naphthalene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463

* 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
L1922965-3 EAST STORM WATER POND Sampled By: CLIENT on 08-MAY-17 @ 12:45 Matrix: WATER							
Semi-Volatile Organics							
Pentachlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
Perylene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Phenanthrene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
Pyrene	<0.20		0.20	ug/L	15-MAY-17	16-MAY-17	R3724463
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	15-MAY-17	16-MAY-17	R3724463
Surrogate: 2-Fluorobiphenyl	82.5		40-130	%	15-MAY-17	16-MAY-17	R3724463
Surrogate: Nitrobenzene d5	82.8		50-130	%	15-MAY-17	16-MAY-17	R3724463
Surrogate: p-Terphenyl d14	93.1		40-130	%	15-MAY-17	16-MAY-17	R3724463
Report Remarks : DLM - Cd LOR increased due to potential interference from Mo.							

* 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	Aluminum (Al)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Boron (B)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1922965-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L1922965-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
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	SW846 8270

Aqueous samples are extracted and extracts are analyzed on GC/MSD.

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 CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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, 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-N-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	ISO 14403-2

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).

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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-	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.

Quality Control Report

Workorder: L1922965 Report Date: 18-MAY-17

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 R3719193								
WG2526087-2 LCS								
2,3,6-Trichlorophenol			86.8		%		50-130	12-MAY-17
WG2526087-3 LCSD		**WG2526087-2**						
2,3,6-Trichlorophenol		86.8	84.3		%	2.9	50	12-MAY-17
WG2526087-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	12-MAY-17
Surrogate: Phenol d5			40.0		%		30-130	12-MAY-17
Surrogate: 2,4,6-Tribromophenol			71.8		%		40-150	12-MAY-17
Batch R3724264								
WG2528106-2 LCS								
2,3,6-Trichlorophenol			77.6		%		50-130	16-MAY-17
WG2528106-3 LCSD		**WG2528106-2**						
2,3,6-Trichlorophenol		77.6	83.8		%	7.8	50	16-MAY-17
WG2528106-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	16-MAY-17
Surrogate: Phenol d5			38.8		%		30-130	16-MAY-17
Surrogate: 2,4,6-Tribromophenol			70.9		%		40-150	16-MAY-17
625-WT	**Water**							
Batch R3719108								
WG2526087-2 LCS								
1-Methylnaphthalene			92.8		%		50-140	12-MAY-17
1,2-Dichlorobenzene			76.8		%		40-130	12-MAY-17
1,2,4-Trichlorobenzene			76.1		%		40-130	12-MAY-17
1,3-Dichlorobenzene			76.6		%		50-140	12-MAY-17
1,4-Dichlorobenzene			76.4		%		40-130	12-MAY-17
2-Chlorophenol			80.1		%		50-140	12-MAY-17
2-Methylnaphthalene			82.2		%		50-140	12-MAY-17
2,3,4,5-Tetrachlorophenol			93.8		%		50-140	12-MAY-17
2,3,4,6-Tetrachlorophenol			89.6		%		50-140	12-MAY-17
2,4-Dichlorophenol			88.9		%		50-140	12-MAY-17
2,4-Dimethylphenol			75.9		%		50-140	12-MAY-17
2,4-Dinitrophenol			90.3		%		40-140	12-MAY-17
2,4-Dinitrotoluene			96.2		%		50-140	12-MAY-17
2,4,5-Trichlorophenol			94.6		%		50-140	12-MAY-17
2,4,6-Trichlorophenol			89.3		%		50-140	12-MAY-17
2,6-Dinitrotoluene			90.0		%		50-140	12-MAY-17

Quality Control Report

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 R3719108								
WG2526087-2 LCS								
3,3'-Dichlorobenzidine			67.4		%		50-140	12-MAY-17
4-Chloroaniline			77.5		%		30-140	12-MAY-17
Acenaphthene			83.4		%		50-140	12-MAY-17
Acenaphthylene			88.0		%		50-140	12-MAY-17
Anthracene			91.3		%		50-140	12-MAY-17
Benzo(a)anthracene			95.1		%		50-140	12-MAY-17
Benzo(a)pyrene			97.4		%		60-130	12-MAY-17
Benzo(b)fluoranthene			96.7		%		50-140	12-MAY-17
Benzo(ghi)perylene			79.4		%		50-140	12-MAY-17
Benzo(k)fluoranthene			98.6		%		50-140	12-MAY-17
Bis(2-chloroethyl)ether			86.1		%		50-140	12-MAY-17
Bis(2-ethylhexyl)phthalate			88.2		%		50-140	12-MAY-17
Chrysene			92.7		%		50-140	12-MAY-17
Dibenzo(a,h)anthracene			75.2		%		50-140	12-MAY-17
Diethylphthalate			83.2		%		50-140	12-MAY-17
Dimethylphthalate			81.9		%		50-140	12-MAY-17
Fluoranthene			97.1		%		50-140	12-MAY-17
Fluorene			87.1		%		50-140	12-MAY-17
Hexachlorobenzene			88.3		%		40-130	12-MAY-17
Hexachlorobutadiene			69.3		%		40-130	12-MAY-17
Indeno(1,2,3-cd)pyrene			71.8		%		50-140	12-MAY-17
Naphthalene			82.2		%		50-140	12-MAY-17
Pentachlorophenol			93.0		%		50-140	12-MAY-17
Perylene			101.9		%		50-140	12-MAY-17
Phenanthrene			93.6		%		50-140	12-MAY-17
Pyrene			97.9		%		50-140	12-MAY-17
WG2526087-3 LCSD		**WG2526087-2**						
1-Methylnaphthalene		92.8	90.4		%	2.6	50	12-MAY-17
1,2-Dichlorobenzene		76.8	75.2		%	2.0	50	12-MAY-17
1,2,4-Trichlorobenzene		76.1	75.4		%	0.9	50	12-MAY-17
1,3-Dichlorobenzene		76.6	74.6		%	2.7	50	12-MAY-17
1,4-Dichlorobenzene		76.4	74.4		%	2.7	50	12-MAY-17
2-Chlorophenol		80.1	78.2		%	2.3	50	12-MAY-17

Quality Control Report

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 R3719108								
WG2526087-3 LCSD		**WG2526087-2**						
2-Methylnaphthalene		82.2	81.2		%	1.2	50	12-MAY-17
2,3,4,5-Tetrachlorophenol		93.8	92.8		%	1.1	50	12-MAY-17
2,3,4,6-Tetrachlorophenol		89.6	88.3		%	1.5	50	12-MAY-17
2,4-Dichlorophenol		88.9	87.9		%	1.1	50	12-MAY-17
2,4-Dimethylphenol		75.9	72.9		%	4.0	50	12-MAY-17
2,4-Dinitrophenol		90.3	96.2		%	6.3	50	12-MAY-17
2,4-Dinitrotoluene		96.2	96.0		%	0.1	50	12-MAY-17
2,4,5-Trichlorophenol		94.6	93.7		%	0.9	50	12-MAY-17
2,4,6-Trichlorophenol		89.3	88.1		%	1.5	50	12-MAY-17
2,6-Dinitrotoluene		90.0	91.4		%	1.6	50	12-MAY-17
3,3'-Dichlorobenzidine		67.4	65.3		%	3.1	50	12-MAY-17
4-Chloroaniline		77.5	73.6		%	5.1	50	12-MAY-17
Acenaphthene		83.4	80.8		%	3.2	50	12-MAY-17
Acenaphthylene		88.0	85.2		%	3.3	50	12-MAY-17
Anthracene		91.3	88.8		%	2.8	50	12-MAY-17
Benzo(a)anthracene		95.1	90.6		%	4.8	50	12-MAY-17
Benzo(a)pyrene		97.4	93.5		%	4.1	50	12-MAY-17
Benzo(b)fluoranthene		96.7	96.6		%	0.1	50	12-MAY-17
Benzo(ghi)perylene		79.4	80.7		%	1.7	50	12-MAY-17
Benzo(k)fluoranthene		98.6	95.5		%	3.2	50	12-MAY-17
Bis(2-chloroethyl)ether		86.1	85.3		%	1.0	50	12-MAY-17
Bis(2-ethylhexyl)phthalate		88.2	79.5		%	10	50	12-MAY-17
Chrysene		92.7	89.0		%	4.0	50	12-MAY-17
Dibenzo(a,h)anthracene		75.2	77.3		%	2.8	50	12-MAY-17
Diethylphthalate		83.2	81.6		%	2.0	50	12-MAY-17
Dimethylphthalate		81.9	79.9		%	2.4	50	12-MAY-17
Fluoranthene		97.1	87.6		%	10	50	12-MAY-17
Fluorene		87.1	84.3		%	3.3	50	12-MAY-17
Hexachlorobenzene		88.3	86.4		%	2.2	50	12-MAY-17
Hexachlorobutadiene		69.3	70.1		%	1.2	50	12-MAY-17
Indeno(1,2,3-cd)pyrene		71.8	73.7		%	2.5	50	12-MAY-17
Naphthalene		82.2	80.2		%	2.4	50	12-MAY-17
Pentachlorophenol		93.0	92.1		%			12-MAY-17

Quality Control Report

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 R3719108								
WG2526087-3 LCSD		**WG2526087-2**						
Pentachlorophenol		93.0	92.1		%	1.0	50	12-MAY-17
Perylene		101.9	98.5		%	3.5	50	12-MAY-17
Phenanthrene		93.6	88.8		%	5.2	50	12-MAY-17
Pyrene		97.9	92.2		%	5.9	50	12-MAY-17
WG2526087-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	12-MAY-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	12-MAY-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	12-MAY-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	12-MAY-17
1,4-Dichlorobenzene			<0.40		ug/L		0.4	12-MAY-17
2-Chlorophenol			<0.30		ug/L		0.3	12-MAY-17
2-Methylnaphthalene			<0.40		ug/L		0.4	12-MAY-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	12-MAY-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	12-MAY-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	12-MAY-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	12-MAY-17
2,4-Dinitrophenol			<1.0		ug/L		1	12-MAY-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	12-MAY-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	12-MAY-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	12-MAY-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	12-MAY-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	12-MAY-17
4-Chloroaniline			<0.40		ug/L		0.4	12-MAY-17
Acenaphthene			<0.20		ug/L		0.2	12-MAY-17
Acenaphthylene			<0.20		ug/L		0.2	12-MAY-17
Anthracene			<0.20		ug/L		0.2	12-MAY-17
Benzo(a)anthracene			<0.20		ug/L		0.2	12-MAY-17
Benzo(a)pyrene			<0.050		ug/L		0.05	12-MAY-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	12-MAY-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	12-MAY-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	12-MAY-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	12-MAY-17
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	12-MAY-17
Chrysene			<0.20				0.2	

Quality Control Report

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 R3719108								
WG2526087-1 MB								
Chrysene			<0.20		ug/L		0.2	12-MAY-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	12-MAY-17
Diethylphthalate			<0.20		ug/L		0.2	12-MAY-17
Dimethylphthalate			<0.20		ug/L		0.2	12-MAY-17
Fluoranthene			<0.20		ug/L		0.2	12-MAY-17
Fluorene			<0.20		ug/L		0.2	12-MAY-17
Hexachlorobenzene			<0.040		ug/L		0.04	12-MAY-17
Hexachlorobutadiene			<0.20		ug/L		0.2	12-MAY-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	12-MAY-17
Naphthalene			<0.20		ug/L		0.2	12-MAY-17
Pentachlorophenol			<0.50		ug/L		0.5	12-MAY-17
Perylene			<0.20		ug/L		0.2	12-MAY-17
Phenanthrene			<0.20		ug/L		0.2	12-MAY-17
Pyrene			<0.20		ug/L		0.2	12-MAY-17
Surrogate: 2-Fluorobiphenyl			74.0		%		40-130	12-MAY-17
Surrogate: Nitrobenzene d5			74.3		%		50-130	12-MAY-17
Surrogate: p-Terphenyl d14			85.3		%		40-130	12-MAY-17
Batch R3724463								
WG2528106-2 LCS								
1-Methylnaphthalene			84.2		%		50-140	16-MAY-17
1,2-Dichlorobenzene			69.5		%		40-130	16-MAY-17
1,2,4-Trichlorobenzene			67.9		%		40-130	16-MAY-17
1,3-Dichlorobenzene			66.7		%		50-140	16-MAY-17
1,4-Dichlorobenzene			67.1		%		40-130	16-MAY-17
2-Chlorophenol			76.1		%		50-140	16-MAY-17
2-Methylnaphthalene			74.2		%		50-140	16-MAY-17
2,3,4,5-Tetrachlorophenol			89.6		%		50-140	16-MAY-17
2,3,4,6-Tetrachlorophenol			91.0		%		50-140	16-MAY-17
2,4-Dichlorophenol			86.1		%		50-140	16-MAY-17
2,4-Dimethylphenol			84.3		%		50-140	16-MAY-17
2,4-Dinitrophenol			102.8		%		40-140	16-MAY-17
2,4-Dinitrotoluene			96.1		%		50-140	16-MAY-17
2,4,5-Trichlorophenol			91.0		%		50-140	16-MAY-17
2,4,6-Trichlorophenol			86.4		%		50-140	16-MAY-17

Quality Control Report

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 R3724463								
WG2528106-2 LCS								
2,6-Dinitrotoluene			91.4		%		50-140	16-MAY-17
3,3'-Dichlorobenzidine			71.7		%		50-140	16-MAY-17
4-Chloroaniline			62.6		%		30-140	16-MAY-17
Acenaphthene			75.6		%		50-140	16-MAY-17
Acenaphthylene			81.5		%		50-140	16-MAY-17
Anthracene			85.4		%		50-140	16-MAY-17
Benzo(a)anthracene			90.1		%		50-140	16-MAY-17
Benzo(a)pyrene			87.1		%		60-130	16-MAY-17
Benzo(b)fluoranthene			87.1		%		50-140	16-MAY-17
Benzo(ghi)perylene			89.9		%		50-140	16-MAY-17
Benzo(k)fluoranthene			87.3		%		50-140	16-MAY-17
Bis(2-chloroethyl)ether			83.8		%		50-140	16-MAY-17
Bis(2-ethylhexyl)phthalate			99.98		%		50-140	16-MAY-17
Chrysene			91.3		%		50-140	16-MAY-17
Dibenzo(a,h)anthracene			92.0		%		50-140	16-MAY-17
Diethylphthalate			79.4		%		50-140	16-MAY-17
Dimethylphthalate			76.0		%		50-140	16-MAY-17
Fluoranthene			90.6		%		50-140	16-MAY-17
Fluorene			83.8		%		50-140	16-MAY-17
Hexachlorobenzene			81.0		%		40-130	16-MAY-17
Hexachlorobutadiene			60.0		%		40-130	16-MAY-17
Indeno(1,2,3-cd)pyrene			92.8		%		50-140	16-MAY-17
Naphthalene			75.8		%		50-140	16-MAY-17
Pentachlorophenol			97.0		%		50-140	16-MAY-17
Perylene			93.0		%		50-140	16-MAY-17
Phenanthrene			87.9		%		50-140	16-MAY-17
Pyrene			89.5		%		50-140	16-MAY-17
WG2528106-3 LCSD		**WG2528106-2**						
1-Methylnaphthalene		84.2	79.5		%	5.8	50	16-MAY-17
1,2-Dichlorobenzene		69.5	60.9		%	13	50	16-MAY-17
1,2,4-Trichlorobenzene		67.9	58.8		%	14	50	16-MAY-17
1,3-Dichlorobenzene		66.7	58.8		%	13	50	16-MAY-17
1,4-Dichlorobenzene		67.1	57.5		%	15	50	16-MAY-17

Quality Control Report

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 R3724463								
WG2528106-3 LCSD		**WG2528106-2**						
2-Chlorophenol		76.1	77.3		%	1.7	50	16-MAY-17
2-Methylnaphthalene		74.2	67.7		%	9.2	50	16-MAY-17
2,3,4,5-Tetrachlorophenol		89.6	92.2		%	2.8	50	16-MAY-17
2,3,4,6-Tetrachlorophenol		91.0	92.7		%	1.9	50	16-MAY-17
2,4-Dichlorophenol		86.1	87.2		%	1.3	50	16-MAY-17
2,4-Dimethylphenol		84.3	91.0		%	7.6	50	16-MAY-17
2,4-Dinitrophenol		102.8	112.4		%	8.9	50	16-MAY-17
2,4-Dinitrotoluene		96.1	98.8		%	2.8	50	16-MAY-17
2,4,5-Trichlorophenol		91.0	94.6		%	3.8	50	16-MAY-17
2,4,6-Trichlorophenol		86.4	87.8		%	1.6	50	16-MAY-17
2,6-Dinitrotoluene		91.4	94.2		%	3.0	50	16-MAY-17
3,3'-Dichlorobenzidine		71.7	73.8		%	2.9	50	16-MAY-17
4-Chloroaniline		62.6	58.8		%	6.2	50	16-MAY-17
Acenaphthene		75.6	75.2		%	0.6	50	16-MAY-17
Acenaphthylene		81.5	80.6		%	1.1	50	16-MAY-17
Anthracene		85.4	88.9		%	4.0	50	16-MAY-17
Benzo(a)anthracene		90.1	87.8		%	2.6	50	16-MAY-17
Benzo(a)pyrene		87.1	88.0		%	1.1	50	16-MAY-17
Benzo(b)fluoranthene		87.1	88.6		%	1.7	50	16-MAY-17
Benzo(ghi)perylene		89.9	89.3		%	0.7	50	16-MAY-17
Benzo(k)fluoranthene		87.3	82.4		%	5.8	50	16-MAY-17
Bis(2-chloroethyl)ether		83.8	84.6		%	1.0	50	16-MAY-17
Bis(2-ethylhexyl)phthalate		99.98	87.6		%	13	50	16-MAY-17
Chrysene		91.3	85.4		%	6.7	50	16-MAY-17
Dibenzo(a,h)anthracene		92.0	91.7		%	0.4	50	16-MAY-17
Diethylphthalate		79.4	81.1		%	2.1	50	16-MAY-17
Dimethylphthalate		76.0	79.7		%	4.7	50	16-MAY-17
Fluoranthene		90.6	81.8		%	10	50	16-MAY-17
Fluorene		83.8	82.9		%	1.0	50	16-MAY-17
Hexachlorobenzene		81.0	83.7		%	3.3	50	16-MAY-17
Hexachlorobutadiene		60.0	53.1		%	12	50	16-MAY-17
Indeno(1,2,3-cd)pyrene		92.8	84.2		%	9.7	50	16-MAY-17
Naphthalene		75.8	70.2		%			16-MAY-17

Quality Control Report

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 R3724463								
WG2528106-3 LCSD		**WG2528106-2**						
Naphthalene		75.8	70.2		%	7.6	50	16-MAY-17
Pentachlorophenol		97.0	102.5		%	5.5	50	16-MAY-17
Perylene		93.0	91.5		%	1.7	50	16-MAY-17
Phenanthrene		87.9	88.7		%	0.9	50	16-MAY-17
Pyrene		89.5	81.5		%	9.4	50	16-MAY-17
WG2528106-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	16-MAY-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	16-MAY-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	16-MAY-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	16-MAY-17
1,4-Dichlorobenzene			<0.40		ug/L		0.4	16-MAY-17
2-Chlorophenol			<0.30		ug/L		0.3	16-MAY-17
2-Methylnaphthalene			<0.40		ug/L		0.4	16-MAY-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	16-MAY-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	16-MAY-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	16-MAY-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	16-MAY-17
2,4-Dinitrophenol			<1.0		ug/L		1	16-MAY-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	16-MAY-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	16-MAY-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	16-MAY-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	16-MAY-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	16-MAY-17
4-Chloroaniline			<0.40		ug/L		0.4	16-MAY-17
Acenaphthene			<0.20		ug/L		0.2	16-MAY-17
Acenaphthylene			<0.20		ug/L		0.2	16-MAY-17
Anthracene			<0.20		ug/L		0.2	16-MAY-17
Benzo(a)anthracene			<0.20		ug/L		0.2	16-MAY-17
Benzo(a)pyrene			<0.050		ug/L		0.05	16-MAY-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	16-MAY-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	16-MAY-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	16-MAY-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	16-MAY-17
							2	

Quality Control Report

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 R3724463								
WG2528106-1 MB								
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	16-MAY-17
Chrysene			<0.20		ug/L		0.2	16-MAY-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	16-MAY-17
Diethylphthalate			<0.20		ug/L		0.2	16-MAY-17
Dimethylphthalate			<0.20		ug/L		0.2	16-MAY-17
Fluoranthene			<0.20		ug/L		0.2	16-MAY-17
Fluorene			<0.20		ug/L		0.2	16-MAY-17
Hexachlorobenzene			<0.040		ug/L		0.04	16-MAY-17
Hexachlorobutadiene			<0.20		ug/L		0.2	16-MAY-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	16-MAY-17
Naphthalene			<0.20		ug/L		0.2	16-MAY-17
Pentachlorophenol			<0.50		ug/L		0.5	16-MAY-17
Perylene			<0.20		ug/L		0.2	16-MAY-17
Phenanthrene			<0.20		ug/L		0.2	16-MAY-17
Pyrene			<0.20		ug/L		0.2	16-MAY-17
Surrogate: 2-Fluorobiphenyl			74.3		%		40-130	16-MAY-17
Surrogate: Nitrobenzene d5			76.8		%		50-130	16-MAY-17
Surrogate: p-Terphenyl d14			106.3		%		40-130	16-MAY-17
COMMENTS: RRQC: Although method blank was non-detect, a strong peak was present. Samples of similar concentrations have been qualified.								
ALK-WT	**Water**							
Batch R3721877								
WG2526453-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			108.0		%		80-120	11-MAY-17
WG2526453-4 DUP		**L1922144-1**						
Alkalinity, Total (as CaCO3)		208	200		mg/L	3.9	20	11-MAY-17
WG2526453-2 LCS								
Alkalinity, Total (as CaCO3)			102.6		%		85-115	11-MAY-17
WG2526453-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	11-MAY-17
BR-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	11-MAY-17
WG2526400-2 LCS								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-2 LCS								
Bromide (Br)			100.9		%		85-115	11-MAY-17
WG2526400-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Bromide (Br)			92.3		%		75-125	11-MAY-17
C-DIS-ORG-WT	**Water**							
Batch R3717586								
WG2525256-3 DUP		**L1921912-1**						
Dissolved Organic Carbon		<1.0	<1.0	RPD-NA	mg/L	N/A	20	09-MAY-17
WG2525256-2 LCS								
Dissolved Organic Carbon			97.2		%		80-120	09-MAY-17
WG2525256-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	09-MAY-17
WG2525256-4 MS		**L1921912-1**						
Dissolved Organic Carbon			84.1		%		70-130	09-MAY-17
Batch R3721425								
WG2526085-3 DUP		**L1922998-1**						
Dissolved Organic Carbon		1.4	1.4		mg/L	0.1	20	10-MAY-17
WG2526085-2 LCS								
Dissolved Organic Carbon			95.4		%		80-120	10-MAY-17
WG2526085-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-17
WG2526085-4 MS		**L1922998-1**						
Dissolved Organic Carbon			95.1		%		70-130	10-MAY-17
CL-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Chloride (Cl)		12.2	12.1		mg/L	0.1	20	11-MAY-17
WG2526400-2 LCS								
Chloride (Cl)			100.5		%		90-110	11-MAY-17
WG2526400-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Chloride (Cl)			99.4		%		75-125	11-MAY-17
CN-TOT-WT	**Water**							

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-TOT-WT	**Water**							
Batch R3722005								
WG2528252-3 DUP		**L1925974-1**						
Cyanide, Total		<0.020	<0.020	RPD-NA	mg/L	N/A	20	15-MAY-17
WG2528252-2 LCS								
Cyanide, Total			92.9		%		80-120	15-MAY-17
WG2528252-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	15-MAY-17
WG2528252-4 MS		**L1925974-1**						
Cyanide, Total			83.7		%		70-130	15-MAY-17
COD-T-WT	**Water**							
Batch R3721444								
WG2528110-3 DUP		**L1922965-1**						
COD		14	11	J	mg/L	3	20	14-MAY-17
WG2528110-2 LCS								
COD			112.8		%		85-115	14-MAY-17
WG2528110-1 MB								
COD			<10		mg/L		10	14-MAY-17
WG2528110-4 MS		**L1922965-1**						
COD			94.0		%		75-125	14-MAY-17
CR-CR6-IC-WT	**Water**							
Batch R3717604								
WG2524531-4 DUP		**WG2524531-3**						
Chromium, Hexavalent		0.0025	0.0025		mg/L	2.4	20	09-MAY-17
WG2524531-2 LCS								
Chromium, Hexavalent			93.6		%		80-120	09-MAY-17
WG2524531-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	09-MAY-17
WG2524531-5 MS		**WG2524531-3**						
Chromium, Hexavalent			89.5		%		70-130	09-MAY-17
EC-WT	**Water**							
Batch R3717597								
WG2524588-7 DUP		**WG2524588-6**						
Conductivity		1420	1430		umhos/cm	0.3	10	09-MAY-17
WG2524588-5 LCS								
Conductivity			101.7		%		90-110	09-MAY-17
WG2524588-8 MB								
Conductivity			<3.0		umhos/cm		3	09-MAY-17
F-IC-N-WT	**Water**							

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Fluoride (F)		0.052	0.050		mg/L	4.3	20	11-MAY-17
WG2526400-2 LCS								
Fluoride (F)			101.0		%		90-110	11-MAY-17
WG2526400-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Fluoride (F)			100.0		%		75-125	11-MAY-17
HG-T-CVAA-WT	**Water**							
Batch R3717879								
WG2525405-3 DUP		**L1923436-1**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-MAY-17
WG2525405-2 LCS								
Mercury (Hg)-Total			93.6		%		80-120	10-MAY-17
WG2525405-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	10-MAY-17
WG2525405-4 MS		**L1923436-2**						
Mercury (Hg)-Total			84.1		%		70-130	10-MAY-17
MET-T-CCMS-WT	**Water**							
Batch R3717608								
WG2524842-4 DUP		**WG2524842-3**						
Aluminum (Al)-Total		0.432	0.436		mg/L	1.0	20	09-MAY-17
Antimony (Sb)-Total		0.00040	0.00039		mg/L	3.3	20	09-MAY-17
Arsenic (As)-Total		0.00106	0.00107		mg/L	0.7	20	09-MAY-17
Barium (Ba)-Total		0.0430	0.0434		mg/L	0.9	20	09-MAY-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-MAY-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-MAY-17
Boron (B)-Total		0.141	0.142		mg/L	0.5	20	09-MAY-17
Cadmium (Cd)-Total		0.000036	0.000039		mg/L	9.6	20	09-MAY-17
Calcium (Ca)-Total		79.9	75.9		mg/L	5.1	20	09-MAY-17
Cobalt (Co)-Total		0.00039	0.00040		mg/L	1.3	20	09-MAY-17
Copper (Cu)-Total		0.0014	0.0014		mg/L	0.3	20	09-MAY-17
Iron (Fe)-Total		0.362	0.374		mg/L	3.3	20	09-MAY-17
Lead (Pb)-Total		0.000304	0.000304		mg/L	0.2	20	09-MAY-17
Magnesium (Mg)-Total		23.1	22.9		mg/L	0.7	20	09-MAY-17
Manganese (Mn)-Total		0.0402	0.0403		mg/L	0.4	20	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-4 DUP		**WG2524842-3**						
Molybdenum (Mo)-Total		0.0391	0.0375		mg/L	4.2	20	09-MAY-17
Nickel (Ni)-Total		0.00304	0.00304		mg/L	0.0	20	09-MAY-17
Potassium (K)-Total		4.45	4.30		mg/L	3.3	20	09-MAY-17
Selenium (Se)-Total		0.00147	0.00153		mg/L	4.0	20	09-MAY-17
Silicon (Si)-Total		2.46	2.55		mg/L	3.9	20	09-MAY-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-MAY-17
Sodium (Na)-Total		35.5	36.2		mg/L	2.0	20	09-MAY-17
Strontium (Sr)-Total		0.587	0.563		mg/L	4.3	20	09-MAY-17
Thallium (Tl)-Total		0.000021	0.000020		mg/L	2.0	20	09-MAY-17
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-MAY-17
Vanadium (V)-Total		0.00108	0.00112		mg/L	3.0	20	09-MAY-17
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	09-MAY-17
WG2524842-2 LCS								
Aluminum (Al)-Total			103.1		%		80-120	09-MAY-17
Antimony (Sb)-Total			98.9		%		80-120	09-MAY-17
Arsenic (As)-Total			97.8		%		80-120	09-MAY-17
Barium (Ba)-Total			102.1		%		80-120	09-MAY-17
Beryllium (Be)-Total			98.6		%		80-120	09-MAY-17
Bismuth (Bi)-Total			97.6		%		80-120	09-MAY-17
Boron (B)-Total			95.5		%		80-120	09-MAY-17
Cadmium (Cd)-Total			97.0		%		80-120	09-MAY-17
Calcium (Ca)-Total			97.8		%		80-120	09-MAY-17
Cobalt (Co)-Total			97.8		%		80-120	09-MAY-17
Copper (Cu)-Total			97.4		%		80-120	09-MAY-17
Iron (Fe)-Total			98.9		%		80-120	09-MAY-17
Lead (Pb)-Total			103.9		%		80-120	09-MAY-17
Magnesium (Mg)-Total			99.6		%		80-120	09-MAY-17
Manganese (Mn)-Total			99.4		%		80-120	09-MAY-17
Molybdenum (Mo)-Total			93.8		%		80-120	09-MAY-17
Nickel (Ni)-Total			97.1		%		80-120	09-MAY-17
Potassium (K)-Total			102.9		%		80-120	09-MAY-17
Selenium (Se)-Total			94.5		%		80-120	09-MAY-17
Silicon (Si)-Total			111.5		%		60-140	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-2 LCS								
Silver (Ag)-Total			99.3		%		80-120	09-MAY-17
Sodium (Na)-Total			98.7		%		80-120	09-MAY-17
Strontium (Sr)-Total			98.4		%		80-120	09-MAY-17
Thallium (Tl)-Total			97.2		%		80-120	09-MAY-17
Tin (Sn)-Total			97.2		%		80-120	09-MAY-17
Vanadium (V)-Total			99.5		%		80-120	09-MAY-17
Zinc (Zn)-Total			91.6		%		80-120	09-MAY-17
WG2524842-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	09-MAY-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	09-MAY-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Boron (B)-Total			<0.010		mg/L		0.01	09-MAY-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	09-MAY-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	09-MAY-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	09-MAY-17
Iron (Fe)-Total			<0.050		mg/L		0.05	09-MAY-17
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	09-MAY-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	09-MAY-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-MAY-17
Potassium (K)-Total			<0.050		mg/L		0.05	09-MAY-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Silicon (Si)-Total			<0.10		mg/L		0.1	09-MAY-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Sodium (Na)-Total			<0.50		mg/L		0.5	09-MAY-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	09-MAY-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-MAY-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-1 MB								
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-MAY-17
WG2524842-5 MS		**WG2524842-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	09-MAY-17
Antimony (Sb)-Total			95.5		%		70-130	09-MAY-17
Arsenic (As)-Total			96.2		%		70-130	09-MAY-17
Barium (Ba)-Total			N/A	MS-B	%		-	09-MAY-17
Beryllium (Be)-Total			91.4		%		70-130	09-MAY-17
Bismuth (Bi)-Total			93.1		%		70-130	09-MAY-17
Boron (B)-Total			N/A	MS-B	%		-	09-MAY-17
Cadmium (Cd)-Total			92.9		%		70-130	09-MAY-17
Calcium (Ca)-Total			N/A	MS-B	%		-	09-MAY-17
Cobalt (Co)-Total			92.3		%		70-130	09-MAY-17
Copper (Cu)-Total			89.3		%		70-130	09-MAY-17
Iron (Fe)-Total			N/A	MS-B	%		-	09-MAY-17
Lead (Pb)-Total			95.8		%		70-130	09-MAY-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	09-MAY-17
Manganese (Mn)-Total			N/A	MS-B	%		-	09-MAY-17
Molybdenum (Mo)-Total			N/A	MS-B	%		-	09-MAY-17
Nickel (Ni)-Total			89.8		%		70-130	09-MAY-17
Potassium (K)-Total			N/A	MS-B	%		-	09-MAY-17
Selenium (Se)-Total			94.6		%		70-130	09-MAY-17
Silicon (Si)-Total			N/A	MS-B	%		-	09-MAY-17
Silver (Ag)-Total			92.4		%		70-130	09-MAY-17
Sodium (Na)-Total			N/A	MS-B	%		-	09-MAY-17
Strontium (Sr)-Total			N/A	MS-B	%		-	09-MAY-17
Thallium (Tl)-Total			94.9		%		70-130	09-MAY-17
Tin (Sn)-Total			94.5		%		70-130	09-MAY-17
Vanadium (V)-Total			96.7		%		70-130	09-MAY-17
Zinc (Zn)-Total			87.7		%		70-130	09-MAY-17
NH3-WT	**Water**							
Batch R3718741								
WG2526270-11 DUP		**L1922973-4**						
Ammonia, Total (as N)		0.025	0.025		mg/L	2.0	20	11-MAY-17
WG2526270-7 DUP		**L1922713-4**						

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R3718741								
WG2526270-7 DUP		**L1922713-4**						
Ammonia, Total (as N)		0.480	0.484		mg/L	0.9	20	11-MAY-17
WG2526270-10 LCS								
Ammonia, Total (as N)			107.1		%		85-115	11-MAY-17
WG2526270-6 LCS								
Ammonia, Total (as N)			102.1		%		85-115	11-MAY-17
WG2526270-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	11-MAY-17
WG2526270-9 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	11-MAY-17
WG2526270-12 MS		**L1922973-4**						
Ammonia, Total (as N)			101.3		%		75-125	11-MAY-17
WG2526270-8 MS		**L1922713-4**						
Ammonia, Total (as N)			N/A	MS-B	%		-	11-MAY-17
NO2-IC-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	11-MAY-17
WG2526400-2 LCS								
Nitrite (as N)			101.6		%		70-130	11-MAY-17
WG2526400-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Nitrite (as N)			99.1		%		70-130	11-MAY-17
NO3-IC-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	11-MAY-17
WG2526400-2 LCS								
Nitrate (as N)			100.4		%		70-130	11-MAY-17
WG2526400-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Nitrate (as N)			96.3		%		70-130	11-MAY-17
P-T-COL-WT	**Water**							

Quality Control Report

Workorder: L1922965 Report Date: 18-MAY-17

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

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WT	**Water**							
Batch R3719517								
WG2527168-3 DUP		**L1922965-1**						
Phosphorus, Total		0.0188	0.0191		mg/L	1.5	20	12-MAY-17
WG2527168-2 LCS								
Phosphorus, Total			99.8		%		80-120	12-MAY-17
WG2527168-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	12-MAY-17
WG2527168-4 MS		**L1922965-1**						
Phosphorus, Total			78.1		%		70-130	12-MAY-17
Batch R3721435								
WG2527429-3 DUP		**L1922965-2**						
Phosphorus, Total		0.0320	0.0304		mg/L	5.1	20	14-MAY-17
WG2527429-2 LCS								
Phosphorus, Total			103.0		%		80-120	14-MAY-17
WG2527429-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	15-MAY-17
WG2527429-4 MS		**L1922965-2**						
Phosphorus, Total			81.4		%		70-130	14-MAY-17
Batch R3726272								
WG2530281-3 DUP		**L1922963-6**						
Phosphorus, Total		0.0580	0.0549		mg/L	5.5	20	18-MAY-17
WG2530281-2 LCS								
Phosphorus, Total			98.8		%		80-120	18-MAY-17
WG2530281-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	18-MAY-17
WG2530281-4 MS		**L1922963-6**						
Phosphorus, Total			84.7		%		70-130	18-MAY-17
PH-WT	**Water**							
Batch R3717597								
WG2524588-7 DUP		**WG2524588-6**						
pH		7.54	7.53	J	pH units	0.00	0.2	09-MAY-17
WG2524588-5 LCS								
pH			6.98		pH units		6.9-7.1	09-MAY-17
PHENOLS-4AAP-WT	**Water**							
Batch R3725333								
WG2528849-15 DUP		**L1922870-1**						
Phenols (4AAP)		0.0027	0.0026		mg/L	2.7	20	16-MAY-17
WG2528849-14 LCS								

Quality Control Report

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 R3725333								
WG2528849-14 LCS								
Phenols (4AAP)			106.9		%		85-115	16-MAY-17
WG2528849-13 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	16-MAY-17
WG2528849-16 MS		**L1922870-1**						
Phenols (4AAP)			102.7		%		75-125	16-MAY-17
SO4-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Sulfate (SO4)		49.9	49.7		mg/L	0.6	20	11-MAY-17
WG2526400-2 LCS								
Sulfate (SO4)			100.4		%		90-110	11-MAY-17
WG2526400-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Sulfate (SO4)			99.4		%		75-125	11-MAY-17
SOLIDS-TDS-WT	**Water**							
Batch R3717938								
WG2524861-3 DUP		**L1921908-3**						
Total Dissolved Solids		260	258		mg/L	0.8	20	09-MAY-17
WG2524861-2 LCS								
Total Dissolved Solids			97.2		%		85-115	09-MAY-17
WG2524861-1 MB								
Total Dissolved Solids			<10		mg/L		10	09-MAY-17
SOLIDS-TSS-WT	**Water**							
Batch R3719397								
WG2526570-3 DUP		**L1922850-2**						
Total Suspended Solids		40.6	37.0		mg/L	9.2	20	12-MAY-17
WG2526570-2 LCS								
Total Suspended Solids			98.8		%		85-115	12-MAY-17
WG2526570-1 MB								
Total Suspended Solids			<2.0		mg/L		2	12-MAY-17
TKN-WT	**Water**							
Batch R3718823								
WG2526140-3 DUP		**L1922713-1**						
Total Kjeldahl Nitrogen		2.54	2.43		mg/L	4.5	20	11-MAY-17
WG2526140-2 LCS								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT	**Water**							
Batch R3718823								
WG2526140-2 LCS								
Total Kjeldahl Nitrogen			105.3		%		75-125	11-MAY-17
WG2526140-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	11-MAY-17
WG2526140-4 MS		**L1922713-1**						
Total Kjeldahl Nitrogen			114.1		%		70-130	11-MAY-17
Batch R3719554								
WG2526876-3 DUP		**L1922973-1**						
Total Kjeldahl Nitrogen		1.49	1.43		mg/L	4.0	20	12-MAY-17
WG2526876-2 LCS								
Total Kjeldahl Nitrogen			98.9		%		75-125	12-MAY-17
WG2526876-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	12-MAY-17
WG2526876-4 MS		**L1922973-1**						
Total Kjeldahl Nitrogen			115.7		%		70-130	12-MAY-17
Batch R3723012								
WG2528147-3 DUP		**L1923993-1**						
Total Kjeldahl Nitrogen		1.67	1.60		mg/L	4.6	20	15-MAY-17
WG2528147-2 LCS								
Total Kjeldahl Nitrogen			108.0		%		75-125	15-MAY-17
WG2528147-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	15-MAY-17
WG2528147-4 MS		**L1923993-1**						
Total Kjeldahl Nitrogen			111.8		%		70-130	15-MAY-17
VOC-ROU-HS-WT	**Water**							
Batch R3718697								
WG2524549-4 DUP		**WG2524549-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	11-MAY-17
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17

Quality Control Report

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 R3718697								
WG2524549-4 DUP		**WG2524549-3**						
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	11-MAY-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	11-MAY-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	11-MAY-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-MAY-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-MAY-17
WG2524549-1 LCS								

Quality Control Report

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 R3718697								
WG2524549-1 LCS								
1,1,1,2-Tetrachloroethane			93.7		%		70-130	10-MAY-17
1,1,2,2-Tetrachloroethane			95.1		%		70-130	10-MAY-17
1,1,1-Trichloroethane			104.5		%		70-130	10-MAY-17
1,1,2-Trichloroethane			95.1		%		70-130	10-MAY-17
1,2-Dibromoethane			94.8		%		70-130	10-MAY-17
1,1-Dichloroethane			103.2		%		70-130	10-MAY-17
1,1-Dichloroethylene			101.0		%		70-130	10-MAY-17
1,2-Dichlorobenzene			97.1		%		70-130	10-MAY-17
1,2-Dichloroethane			106.0		%		70-130	10-MAY-17
1,2-Dichloropropane			104.0		%		70-130	10-MAY-17
1,3-Dichlorobenzene			96.5		%		70-130	10-MAY-17
1,4-Dichlorobenzene			100.0		%		70-130	10-MAY-17
Acetone			116.5		%		60-140	10-MAY-17
Benzene			105.8		%		70-130	10-MAY-17
Bromodichloromethane			102.5		%		70-130	10-MAY-17
Bromoform			93.0		%		70-130	10-MAY-17
Bromomethane			104.7		%		60-140	10-MAY-17
Carbon tetrachloride			104.3		%		70-130	10-MAY-17
Chlorobenzene			98.2		%		70-130	10-MAY-17
Chloroethane			104.9		%		70-130	10-MAY-17
Chloroform			106.1		%		70-130	10-MAY-17
cis-1,2-Dichloroethylene			104.6		%		70-130	10-MAY-17
cis-1,3-Dichloropropene			96.1		%		70-130	10-MAY-17
Dibromochloromethane			100.3		%		70-130	10-MAY-17
Dichlorodifluoromethane			82.4		%		50-140	10-MAY-17
Dichloromethane			108.1		%		70-130	10-MAY-17
Ethylbenzene			98.8		%		70-130	10-MAY-17
m+p-Xylenes			96.4		%		70-130	10-MAY-17
Methyl Ethyl Ketone			100.5		%		60-140	10-MAY-17
Methyl Isobutyl Ketone			96.8		%		50-150	10-MAY-17
n-Hexane			107.9		%		70-130	10-MAY-17
MTBE			96.3		%		70-130	10-MAY-17
o-Xylene			100.7		%		70-130	10-MAY-17

Quality Control Report

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 R3718697								
WG2524549-1 LCS								
Styrene			94.6		%		70-130	10-MAY-17
Tetrachloroethylene			94.5		%		70-130	10-MAY-17
Toluene			89.8		%		70-130	10-MAY-17
trans-1,2-Dichloroethylene			106.3		%		70-130	10-MAY-17
trans-1,3-Dichloropropene			87.1		%		70-130	10-MAY-17
Trichloroethylene			103.0		%		70-130	10-MAY-17
Trichlorofluoromethane			105.5		%		60-140	10-MAY-17
Vinyl chloride			96.0		%		60-140	10-MAY-17
WG2524549-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	11-MAY-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	11-MAY-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	11-MAY-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	11-MAY-17
1,2-Dibromoethane			<0.20		ug/L		0.2	11-MAY-17
1,1-Dichloroethane			<0.50		ug/L		0.5	11-MAY-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	11-MAY-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	11-MAY-17
1,2-Dichloroethane			<0.50		ug/L		0.5	11-MAY-17
1,2-Dichloropropane			<0.50		ug/L		0.5	11-MAY-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	11-MAY-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	11-MAY-17
Acetone			<20		ug/L		20	11-MAY-17
Benzene			<0.50		ug/L		0.5	11-MAY-17
Bromodichloromethane			<1.0		ug/L		1	11-MAY-17
Bromoform			<1.0		ug/L		1	11-MAY-17
Bromomethane			<0.50		ug/L		0.5	11-MAY-17
Carbon tetrachloride			<0.50		ug/L		0.5	11-MAY-17
Chlorobenzene			<0.50		ug/L		0.5	11-MAY-17
Chloroethane			<1.0		ug/L		1	11-MAY-17
Chloroform			<1.0		ug/L		1	11-MAY-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	11-MAY-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	11-MAY-17
Dibromochloromethane			<1.0		ug/L		1	11-MAY-17
Dichlorodifluoromethane			<1.0		ug/L		1	11-MAY-17

Quality Control Report

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 R3718697								
WG2524549-2 MB								
Dichloromethane			<2.0		ug/L		2	11-MAY-17
Ethylbenzene			<0.50		ug/L		0.5	11-MAY-17
m+p-Xylenes			<1.0		ug/L		1	11-MAY-17
Methyl Ethyl Ketone			<20		ug/L		20	11-MAY-17
Methyl Isobutyl Ketone			<20		ug/L		20	11-MAY-17
n-Hexane			<0.50		ug/L		0.5	11-MAY-17
MTBE			<0.50		ug/L		0.5	11-MAY-17
o-Xylene			<0.50		ug/L		0.5	11-MAY-17
Styrene			<0.50		ug/L		0.5	11-MAY-17
Tetrachloroethylene			<0.50		ug/L		0.5	11-MAY-17
Toluene			<0.50		ug/L		0.5	11-MAY-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	11-MAY-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	11-MAY-17
Trichloroethylene			<0.50		ug/L		0.5	11-MAY-17
Trichlorofluoromethane			<1.0		ug/L		1	11-MAY-17
Vinyl chloride			<0.50		ug/L		0.5	11-MAY-17
Surrogate: 1,4-Difluorobenzene			103.5		%		70-130	11-MAY-17
Surrogate: 4-Bromofluorobenzene			97.1		%		70-130	11-MAY-17

Quality Control Report

Workorder: L1922965 Report Date: 18-MAY-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1922965-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Now (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	
	Copy of Invoice with Report ☐ Yes ☐ No	
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	

Project Information	
ALS Quote #:	
Job #:	44985
PO / AFE:	73506479
LSD:	

Oil and Gas Required Fields (client use)		
Approver ID:		Cost Center:
GL Account:		Routing Code:
Activity Code:		
Location:		

ALS Lab Work Order # (lab use only): L1922965

ALS Contact: L.Ermeta

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
1	EQ Pond Discharge	08/05/17	12:15	water	R	R	R	R	R	R	R	R	R	R		10	7.8	
2	West Storm Water Pond	08/05/17	12:30	water	R	R	R	R	R	R	R	R	R	R				
3	East Storm Water Pond	08/05/17	12:45	water	R	R	R	R	R	R	R	R	R	R				

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation**
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐ No ☐
Ice packs	Yes ☑ No ☐	Custody seal intact	Yes ☐ No ☐
Cooling Initiated	☐		

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			9.5		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: R Tobin	Date: Nov 08/17	Time: 14:45	Received by:	Date:	Time:	Received by:	Date: Nov 9/17	Time: 8:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS-FM-0226a v09 Front/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: 09-MAY-17
Report Date: 15-MAY-17 14:19 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1923076

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Laura Ermeta
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1923076-1 EQ POND DISCHARGE Sampled By: CLIENT on 08-MAY-17 @ 12:15 Matrix: WATER							
Microtox Physical Tests							
Turbidity	N/A				12-MAY-17	12-MAY-17	R3719040
Colour	Colourless				12-MAY-17	12-MAY-17	R3719040
Clarification	None				12-MAY-17	12-MAY-17	R3719040
Initial pH	7.9		0.10	pH	12-MAY-17	12-MAY-17	R3719040
Final pH	7.9		0.10	pH	12-MAY-17	12-MAY-17	R3719040
Lab Treatment	None				12-MAY-17	12-MAY-17	R3719040
Microtox Original							
EC50 (15min) Original	>100		1.0	%	12-MAY-17	12-MAY-17	R3719040
EC20 (15min) Original	>100		1.0	%	12-MAY-17	12-MAY-17	R3719040
EC50 (5min) Original	>100		1.0	%	12-MAY-17	12-MAY-17	R3719040
EC20 (5min) Original	>100		1.0	%	12-MAY-17	12-MAY-17	R3719040
Interpretation Original	NON TOXIC				12-MAY-17	12-MAY-17	R3719040
Report Remarks : Microtox reference methods recommend that the maximum elapsed time between sample collection and testing is 48 hours for unrefrigerated samples and one week for samples stored at 4 degrees C, therefore hold time exceedence acceptable.							

* 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-ED	Water	Microtox Original	ERCB Directive 050
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-ED	Water	Microtox Physical Tests	ERCB Directive 050

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, 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: L1923076 Report Date: 15-MAY-17

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-ED	**Water**							
Batch R3719040								
WG2526860-2 CRM		**PHENOL_ED**						
EC50 (5min) Original			18.3		mg/L		13-26	12-MAY-17
WG2526860-3 CRM		**PHENOL_ED**						
EC50 (5min) Original			18.0		mg/L		13-26	12-MAY-17
WG2526860-4 DUP		**L1923076-1**						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		12-MAY-17
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		12-MAY-17
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		12-MAY-17
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		12-MAY-17
WG2526860-1 MB								
EC50 (15min) Original			PASS					12-MAY-17
EC20 (15min) Original			PASS					12-MAY-17
EC50 (5min) Original			PASS					12-MAY-17
EC20 (5min) Original			PASS					12-MAY-17

Quality Control Report

Workorder: L1923076 Report Date: 15-MAY-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L1923076-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☑ 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:	73506479	Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1923076 | ALS Contact: L.Ermeta | Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-ED)	(MICROTOX-PHYSICAL-ED)	Number of Containers
	EQ Pond Discharge	08/05/17	12:15	water	R			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

Please send to ALS Edmonton ASAP for analysis (short HT)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐ | Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐ | Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
9.1					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
R Tobin	May 08/17	14:00		May 9, 17	9:10A			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

HA-PM-0328e v08 Front/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: 09-MAY-17
Report Date: 18-MAY-17 08:33 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1922987

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Laura Ermeta
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1922987-1 STN6 Sampled By: D. DAUM on 08-MAY-17 @ 12:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.99		0.10	pH		16-MAY-17	R3724139
Temperature, Client	8.5		-50	Deg. C		16-MAY-17	R3724139
Physical Tests							
Conductivity	514		3.0	umhos/cm		09-MAY-17	R3717597
Hardness (as CaCO3)	238	HTC	10	mg/L		10-MAY-17	
pH	8.17		0.10	pH units		09-MAY-17	R3717597
Total Suspended Solids	13.5		2.0	mg/L	11-MAY-17	12-MAY-17	R3719397
Total Dissolved Solids	329	DLDS	20	mg/L		09-MAY-17	R3717938
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	193		10	mg/L		11-MAY-17	R3721877
Unionized ammonia	0.0148		0.00039	mg/L		16-MAY-17	
Ammonia, Total (as N)	0.767		0.020	mg/L		11-MAY-17	R3718741
Bromide (Br)	<0.10		0.10	mg/L		11-MAY-17	R3719459
Chloride (Cl)	14.9		0.50	mg/L		11-MAY-17	R3719459
Fluoride (F)	0.210		0.020	mg/L		11-MAY-17	R3719459
Nitrate (as N)	5.59		0.020	mg/L		11-MAY-17	R3719459
Nitrite (as N)	0.035		0.010	mg/L		11-MAY-17	R3719459
Total Kjeldahl Nitrogen	2.21		0.15	mg/L	12-MAY-17	12-MAY-17	R3719554
Phosphorus, Total	0.365		0.0030	mg/L	15-MAY-17	17-MAY-17	R3726150
Sulfate (SO4)	35.7		0.30	mg/L		11-MAY-17	R3719459
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		15-MAY-17	R3722005
Organic / Inorganic Carbon							
Dissolved Organic Carbon	10.5		1.0	mg/L		10-MAY-17	R3721425
Total Metals							
Aluminum (Al)-Total	2.34		0.010	mg/L	09-MAY-17	10-MAY-17	R3717608
Antimony (Sb)-Total	0.00013		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Arsenic (As)-Total	0.00125		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Barium (Ba)-Total	0.0389		0.00020	mg/L	09-MAY-17	10-MAY-17	R3717608
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Boron (B)-Total	0.033		0.010	mg/L	09-MAY-17	10-MAY-17	R3717608
Cadmium (Cd)-Total	0.000058		0.000010	mg/L	09-MAY-17	10-MAY-17	R3717608
Calcium (Ca)-Total	57.1		0.50	mg/L	09-MAY-17	10-MAY-17	R3717608
Cobalt (Co)-Total	0.00087		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Copper (Cu)-Total	0.0049		0.0010	mg/L	09-MAY-17	10-MAY-17	R3717608
Iron (Fe)-Total	2.20		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Lead (Pb)-Total	0.00132		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Magnesium (Mg)-Total	23.1		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Manganese (Mn)-Total	0.0223		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-MAY-17	R3717879
Molybdenum (Mo)-Total	0.00226		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608

* 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
L1922987-1 STN6 Sampled By: D. DAUM on 08-MAY-17 @ 12:00 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00391		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Potassium (K)-Total	3.49		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Selenium (Se)-Total	0.00101		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Silicon (Si)-Total	7.21		0.10	mg/L	09-MAY-17	10-MAY-17	R3717608
Silver (Ag)-Total	<0.000050		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Sodium (Na)-Total	8.46		0.50	mg/L	09-MAY-17	10-MAY-17	R3717608
Strontium (Sr)-Total	0.187		0.0010	mg/L	09-MAY-17	10-MAY-17	R3717608
Thallium (Tl)-Total	0.000035		0.000010	mg/L	09-MAY-17	10-MAY-17	R3717608
Tin (Sn)-Total	<0.00010		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Vanadium (V)-Total	0.00489		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Zinc (Zn)-Total	0.0092		0.0030	mg/L	09-MAY-17	10-MAY-17	R3717608
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		09-MAY-17	R3717604
Aggregate Organics							
COD	36		10	mg/L		14-MAY-17	R3721444
Phenols (4AAP)	0.0021		0.0010	mg/L		16-MAY-17	R3725333
L1922987-2 STN6A Sampled By: D. DAUM on 08-MAY-17 @ 11:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.59		0.10	pH		16-MAY-17	R3724139
Temperature, Client	9.3		-50	Deg. C		16-MAY-17	R3724139
Physical Tests							
Conductivity	534		3.0	umhos/cm		09-MAY-17	R3717597
Hardness (as CaCO3)	248	HTC	10	mg/L		10-MAY-17	
pH	8.16		0.10	pH units		09-MAY-17	R3717597
Total Suspended Solids	13.3		2.0	mg/L	11-MAY-17	12-MAY-17	R3719397
Total Dissolved Solids	328	DLDS	20	mg/L		09-MAY-17	R3717938
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	200		10	mg/L		11-MAY-17	R3721877
Unionized ammonia	0.00322		0.00017	mg/L		16-MAY-17	
Ammonia, Total (as N)	0.390		0.020	mg/L		11-MAY-17	R3718741
Bromide (Br)	<0.10		0.10	mg/L		11-MAY-17	R3719459
Chloride (Cl)	16.7		0.50	mg/L		11-MAY-17	R3719459
Fluoride (F)	0.216		0.020	mg/L		11-MAY-17	R3719459
Nitrate (as N)	5.53		0.020	mg/L		11-MAY-17	R3719459
Nitrite (as N)	0.031		0.010	mg/L		11-MAY-17	R3719459
Total Kjeldahl Nitrogen	1.68		0.15	mg/L	12-MAY-17	12-MAY-17	R3719554
Phosphorus, Total	0.279		0.0030	mg/L	15-MAY-17	17-MAY-17	R3726150
Sulfate (SO4)	39.3		0.30	mg/L		11-MAY-17	R3719459
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		15-MAY-17	R3722005

* 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
L1922987-2 STN6A Sampled By: D. DAUM on 08-MAY-17 @ 11:30 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	10.3		1.0	mg/L		10-MAY-17	R3721425
Total Metals							
Aluminum (Al)-Total	2.01		0.010	mg/L	09-MAY-17	10-MAY-17	R3717608
Antimony (Sb)-Total	0.00013		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Arsenic (As)-Total	0.00111		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Barium (Ba)-Total	0.0353		0.00020	mg/L	09-MAY-17	10-MAY-17	R3717608
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Boron (B)-Total	0.036		0.010	mg/L	09-MAY-17	10-MAY-17	R3717608
Cadmium (Cd)-Total	0.000048		0.000010	mg/L	09-MAY-17	10-MAY-17	R3717608
Calcium (Ca)-Total	60.7		0.50	mg/L	09-MAY-17	10-MAY-17	R3717608
Cobalt (Co)-Total	0.00079		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Copper (Cu)-Total	0.0040		0.0010	mg/L	09-MAY-17	10-MAY-17	R3717608
Iron (Fe)-Total	1.92		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Lead (Pb)-Total	0.00111		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Magnesium (Mg)-Total	23.5		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Manganese (Mn)-Total	0.0212		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-MAY-17	R3717879
Molybdenum (Mo)-Total	0.00307		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Nickel (Ni)-Total	0.00351		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Potassium (K)-Total	3.20		0.050	mg/L	09-MAY-17	10-MAY-17	R3717608
Selenium (Se)-Total	0.000961		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Silicon (Si)-Total	6.62		0.10	mg/L	09-MAY-17	10-MAY-17	R3717608
Silver (Ag)-Total	<0.000050		0.000050	mg/L	09-MAY-17	10-MAY-17	R3717608
Sodium (Na)-Total	9.70		0.50	mg/L	09-MAY-17	10-MAY-17	R3717608
Strontium (Sr)-Total	0.206		0.0010	mg/L	09-MAY-17	10-MAY-17	R3717608
Thallium (Tl)-Total	0.000031		0.000010	mg/L	09-MAY-17	10-MAY-17	R3717608
Tin (Sn)-Total	<0.00010		0.00010	mg/L	09-MAY-17	10-MAY-17	R3717608
Vanadium (V)-Total	0.00429		0.00050	mg/L	09-MAY-17	10-MAY-17	R3717608
Zinc (Zn)-Total	0.0080		0.0030	mg/L	09-MAY-17	10-MAY-17	R3717608
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		09-MAY-17	R3717604
Aggregate Organics							
COD	32		10	mg/L		14-MAY-17	R3721444
Phenols (4AAP)	<0.0010		0.0010	mg/L		16-MAY-17	R3725333

* 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	Aluminum (Al)-Total	MS-B	L1922987-1, -2
Matrix Spike	Barium (Ba)-Total	MS-B	L1922987-1, -2
Matrix Spike	Boron (B)-Total	MS-B	L1922987-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L1922987-1, -2
Matrix Spike	Iron (Fe)-Total	MS-B	L1922987-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1922987-1, -2
Matrix Spike	Manganese (Mn)-Total	MS-B	L1922987-1, -2
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1922987-1, -2
Matrix Spike	Potassium (K)-Total	MS-B	L1922987-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L1922987-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L1922987-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L1922987-1, -2
Matrix Spike	Phosphorus, Total	MS-B	L1922987-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
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**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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, 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-N-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 ISO 14403-2

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.

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.

Reference Information

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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
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: L1922987 Report Date: 18-MAY-17

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 R3721877								
WG2526453-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			108.0		%		80-120	11-MAY-17
WG2526453-4 DUP		**L1922144-1**						
Alkalinity, Total (as CaCO3)		208	200		mg/L	3.9	20	11-MAY-17
WG2526453-2 LCS								
Alkalinity, Total (as CaCO3)			102.6		%		85-115	11-MAY-17
WG2526453-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	11-MAY-17
BR-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	11-MAY-17
WG2526400-2 LCS								
Bromide (Br)			100.9		%		85-115	11-MAY-17
WG2526400-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Bromide (Br)			92.3		%		75-125	11-MAY-17
C-DIS-ORG-WT	**Water**							
Batch R3721425								
WG2526085-3 DUP		**L1922998-1**						
Dissolved Organic Carbon		1.4	1.4		mg/L	0.1	20	10-MAY-17
WG2526085-2 LCS								
Dissolved Organic Carbon			95.4		%		80-120	10-MAY-17
WG2526085-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-17
WG2526085-4 MS		**L1922998-1**						
Dissolved Organic Carbon			95.1		%		70-130	10-MAY-17
CL-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Chloride (Cl)		12.2	12.1		mg/L	0.1	20	11-MAY-17
WG2526400-2 LCS								
Chloride (Cl)			100.5		%		90-110	11-MAY-17
WG2526400-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						

Quality Control Report

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-N-WT	**Water**							
Batch R3719459								
WG2526400-5 MS		**WG2526400-3**						
Chloride (Cl)			99.4		%		75-125	11-MAY-17
CN-TOT-WT	**Water**							
Batch R3722005								
WG2528252-3 DUP		**L1925974-1**						
Cyanide, Total		<0.020	<0.020	RPD-NA	mg/L	N/A	20	15-MAY-17
WG2528252-2 LCS								
Cyanide, Total			92.9		%		80-120	15-MAY-17
WG2528252-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	15-MAY-17
WG2528252-4 MS		**L1925974-1**						
Cyanide, Total			83.7		%		70-130	15-MAY-17
COD-T-WT	**Water**							
Batch R3721444								
WG2528110-3 DUP		**L1922965-1**						
COD		14	11	J	mg/L	3	20	14-MAY-17
WG2528110-2 LCS								
COD			112.8		%		85-115	14-MAY-17
WG2528110-1 MB								
COD			<10		mg/L		10	14-MAY-17
WG2528110-4 MS		**L1922965-1**						
COD			94.0		%		75-125	14-MAY-17
CR-CR6-IC-WT	**Water**							
Batch R3717604								
WG2524531-4 DUP		**WG2524531-3**						
Chromium, Hexavalent		0.0025	0.0025		mg/L	2.4	20	09-MAY-17
WG2524531-2 LCS								
Chromium, Hexavalent			93.6		%		80-120	09-MAY-17
WG2524531-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	09-MAY-17
WG2524531-5 MS		**WG2524531-3**						
Chromium, Hexavalent			89.5		%		70-130	09-MAY-17
EC-WT	**Water**							

Quality Control Report

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 R3717597								
WG2524588-12 DUP		**WG2524588-11**						
Conductivity		534	532		umhos/cm	0.4	10	09-MAY-17
WG2524588-7 DUP		**WG2524588-6**						
Conductivity		1420	1430		umhos/cm	0.3	10	09-MAY-17
WG2524588-5 LCS								
Conductivity			101.7		%		90-110	09-MAY-17
WG2524588-9 LCS								
Conductivity			102.1		%		90-110	09-MAY-17
WG2524588-10 MB								
Conductivity			<3.0		umhos/cm		3	09-MAY-17
WG2524588-8 MB								
Conductivity			<3.0		umhos/cm		3	09-MAY-17
F-IC-N-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Fluoride (F)		0.052	0.050		mg/L	4.3	20	11-MAY-17
WG2526400-2 LCS								
Fluoride (F)			101.0		%		90-110	11-MAY-17
WG2526400-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Fluoride (F)			100.0		%		75-125	11-MAY-17
HG-T-CVAA-WT	**Water**							
Batch R3717879								
WG2525405-3 DUP		**L1923436-1**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-MAY-17
WG2525405-2 LCS								
Mercury (Hg)-Total			93.6		%		80-120	10-MAY-17
WG2525405-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	10-MAY-17
WG2525405-4 MS		**L1923436-2**						
Mercury (Hg)-Total			84.1		%		70-130	10-MAY-17
MET-T-CCMS-WT	**Water**							
Batch R3717608								
WG2524842-4 DUP		**WG2524842-3**						
Aluminum (Al)-Total		0.432	0.436		mg/L	1.0	20	09-MAY-17
Antimony (Sb)-Total		0.00040	0.00039		mg/L	3.3	20	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-4 DUP		**WG2524842-3**						
Arsenic (As)-Total		0.00106	0.00107		mg/L	0.7	20	09-MAY-17
Barium (Ba)-Total		0.0430	0.0434		mg/L	0.9	20	09-MAY-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-MAY-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-MAY-17
Boron (B)-Total		0.141	0.142		mg/L	0.5	20	09-MAY-17
Cadmium (Cd)-Total		0.000036	0.000039		mg/L	9.6	20	09-MAY-17
Calcium (Ca)-Total		79.9	75.9		mg/L	5.1	20	09-MAY-17
Cobalt (Co)-Total		0.00039	0.00040		mg/L	1.3	20	09-MAY-17
Copper (Cu)-Total		0.0014	0.0014		mg/L	0.3	20	09-MAY-17
Iron (Fe)-Total		0.362	0.374		mg/L	3.3	20	09-MAY-17
Lead (Pb)-Total		0.000304	0.000304		mg/L	0.2	20	09-MAY-17
Magnesium (Mg)-Total		23.1	22.9		mg/L	0.7	20	09-MAY-17
Manganese (Mn)-Total		0.0402	0.0403		mg/L	0.4	20	09-MAY-17
Molybdenum (Mo)-Total		0.0391	0.0375		mg/L	4.2	20	09-MAY-17
Nickel (Ni)-Total		0.00304	0.00304		mg/L	0.0	20	09-MAY-17
Potassium (K)-Total		4.45	4.30		mg/L	3.3	20	09-MAY-17
Selenium (Se)-Total		0.00147	0.00153		mg/L	4.0	20	09-MAY-17
Silicon (Si)-Total		2.46	2.55		mg/L	3.9	20	09-MAY-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-MAY-17
Sodium (Na)-Total		35.5	36.2		mg/L	2.0	20	09-MAY-17
Strontium (Sr)-Total		0.587	0.563		mg/L	4.3	20	09-MAY-17
Thallium (Tl)-Total		0.000021	0.000020		mg/L	2.0	20	09-MAY-17
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-MAY-17
Vanadium (V)-Total		0.00108	0.00112		mg/L	3.0	20	09-MAY-17
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	09-MAY-17
WG2524842-2 LCS								
Aluminum (Al)-Total			103.1		%		80-120	09-MAY-17
Antimony (Sb)-Total			98.9		%		80-120	09-MAY-17
Arsenic (As)-Total			97.8		%		80-120	09-MAY-17
Barium (Ba)-Total			102.1		%		80-120	09-MAY-17
Beryllium (Be)-Total			98.6		%		80-120	09-MAY-17
Bismuth (Bi)-Total			97.6		%		80-120	09-MAY-17
Boron (B)-Total			95.5		%		80-120	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-2 LCS								
Cadmium (Cd)-Total			97.0		%		80-120	09-MAY-17
Calcium (Ca)-Total			97.8		%		80-120	09-MAY-17
Cobalt (Co)-Total			97.8		%		80-120	09-MAY-17
Copper (Cu)-Total			97.4		%		80-120	09-MAY-17
Iron (Fe)-Total			98.9		%		80-120	09-MAY-17
Lead (Pb)-Total			103.9		%		80-120	09-MAY-17
Magnesium (Mg)-Total			99.6		%		80-120	09-MAY-17
Manganese (Mn)-Total			99.4		%		80-120	09-MAY-17
Molybdenum (Mo)-Total			93.8		%		80-120	09-MAY-17
Nickel (Ni)-Total			97.1		%		80-120	09-MAY-17
Potassium (K)-Total			102.9		%		80-120	09-MAY-17
Selenium (Se)-Total			94.5		%		80-120	09-MAY-17
Silicon (Si)-Total			111.5		%		60-140	09-MAY-17
Silver (Ag)-Total			99.3		%		80-120	09-MAY-17
Sodium (Na)-Total			98.7		%		80-120	09-MAY-17
Strontium (Sr)-Total			98.4		%		80-120	09-MAY-17
Thallium (Tl)-Total			97.2		%		80-120	09-MAY-17
Tin (Sn)-Total			97.2		%		80-120	09-MAY-17
Vanadium (V)-Total			99.5		%		80-120	09-MAY-17
Zinc (Zn)-Total			91.6		%		80-120	09-MAY-17
WG2524842-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	09-MAY-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	09-MAY-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Boron (B)-Total			<0.010		mg/L		0.01	09-MAY-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	09-MAY-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	09-MAY-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	09-MAY-17
Iron (Fe)-Total			<0.050		mg/L		0.05	09-MAY-17
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-1 MB								
Magnesium (Mg)-Total			<0.050		mg/L		0.05	09-MAY-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	09-MAY-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-MAY-17
Potassium (K)-Total			<0.050		mg/L		0.05	09-MAY-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Silicon (Si)-Total			<0.10		mg/L		0.1	09-MAY-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	09-MAY-17
Sodium (Na)-Total			<0.50		mg/L		0.5	09-MAY-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	09-MAY-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-MAY-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-MAY-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-MAY-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-MAY-17
WG2524842-5 MS		**WG2524842-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	09-MAY-17
Antimony (Sb)-Total			95.5		%		70-130	09-MAY-17
Arsenic (As)-Total			96.2		%		70-130	09-MAY-17
Barium (Ba)-Total			N/A	MS-B	%		-	09-MAY-17
Beryllium (Be)-Total			91.4		%		70-130	09-MAY-17
Bismuth (Bi)-Total			93.1		%		70-130	09-MAY-17
Boron (B)-Total			N/A	MS-B	%		-	09-MAY-17
Cadmium (Cd)-Total			92.9		%		70-130	09-MAY-17
Calcium (Ca)-Total			N/A	MS-B	%		-	09-MAY-17
Cobalt (Co)-Total			92.3		%		70-130	09-MAY-17
Copper (Cu)-Total			89.3		%		70-130	09-MAY-17
Iron (Fe)-Total			N/A	MS-B	%		-	09-MAY-17
Lead (Pb)-Total			95.8		%		70-130	09-MAY-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	09-MAY-17
Manganese (Mn)-Total			N/A	MS-B	%		-	09-MAY-17
Molybdenum (Mo)-Total			N/A	MS-B	%		-	09-MAY-17
Nickel (Ni)-Total			89.8		%		70-130	09-MAY-17
Potassium (K)-Total			N/A	MS-B	%		-	09-MAY-17
Selenium (Se)-Total			94.6		%		70-130	09-MAY-17

Quality Control Report

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 R3717608								
WG2524842-5 MS		**WG2524842-3**						
Silicon (Si)-Total			N/A	MS-B	%		-	09-MAY-17
Silver (Ag)-Total			92.4		%		70-130	09-MAY-17
Sodium (Na)-Total			N/A	MS-B	%		-	09-MAY-17
Strontium (Sr)-Total			N/A	MS-B	%		-	09-MAY-17
Thallium (Tl)-Total			94.9		%		70-130	09-MAY-17
Tin (Sn)-Total			94.5		%		70-130	09-MAY-17
Vanadium (V)-Total			96.7		%		70-130	09-MAY-17
Zinc (Zn)-Total			87.7		%		70-130	09-MAY-17
NH3-WT	**Water**							
Batch R3718741								
WG2526270-11 DUP		**L1922973-4**						
Ammonia, Total (as N)		0.025	0.025		mg/L	2.0	20	11-MAY-17
WG2526270-10 LCS								
Ammonia, Total (as N)			107.1		%		85-115	11-MAY-17
WG2526270-9 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	11-MAY-17
WG2526270-12 MS		**L1922973-4**						
Ammonia, Total (as N)			101.3		%		75-125	11-MAY-17
NO2-IC-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	11-MAY-17
WG2526400-2 LCS								
Nitrite (as N)			101.6		%		70-130	11-MAY-17
WG2526400-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Nitrite (as N)			99.1		%		70-130	11-MAY-17
NO3-IC-WT	**Water**							
Batch R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	11-MAY-17
WG2526400-2 LCS								
Nitrate (as N)			100.4		%		70-130	11-MAY-17
WG2526400-1 MB								
Nitrate (as N)			<0.020				0.02	

Quality Control Report

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 R3719459								
WG2526400-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Nitrate (as N)			96.3		%		70-130	11-MAY-17
P-T-COL-WT	**Water**							
Batch R3726150								
WG2528544-3 DUP		**L1922966-1**						
Phosphorus, Total		0.230	0.233		mg/L	1.6	20	17-MAY-17
WG2528544-2 LCS								
Phosphorus, Total			98.7		%		80-120	17-MAY-17
WG2528544-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	17-MAY-17
WG2528544-4 MS		**L1922966-1**						
Phosphorus, Total			N/A	MS-B	%		-	17-MAY-17
PH-WT	**Water**							
Batch R3717597								
WG2524588-12 DUP		**WG2524588-11**						
pH		8.20	8.20	J	pH units	0.00	0.2	09-MAY-17
WG2524588-7 DUP		**WG2524588-6**						
pH		7.54	7.53	J	pH units	0.00	0.2	09-MAY-17
WG2524588-5 LCS								
pH			6.98		pH units		6.9-7.1	09-MAY-17
WG2524588-9 LCS								
pH			6.99		pH units		6.9-7.1	09-MAY-17
PHENOLS-4AAP-WT	**Water**							
Batch R3725333								
WG2528849-15 DUP		**L1922870-1**						
Phenols (4AAP)		0.0027	0.0026		mg/L	2.7	20	16-MAY-17
WG2528849-14 LCS								
Phenols (4AAP)			106.9		%		85-115	16-MAY-17
WG2528849-13 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	16-MAY-17
WG2528849-16 MS		**L1922870-1**						
Phenols (4AAP)			102.7		%		75-125	16-MAY-17
SO4-IC-N-WT	**Water**							

Quality Control Report

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 R3719459								
WG2526400-4 DUP		**WG2526400-3**						
Sulfate (SO4)		49.9	49.7		mg/L	0.6	20	11-MAY-17
WG2526400-2 LCS								
Sulfate (SO4)			100.4		%		90-110	11-MAY-17
WG2526400-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAY-17
WG2526400-5 MS		**WG2526400-3**						
Sulfate (SO4)			99.4		%		75-125	11-MAY-17
SOLIDS-TDS-WT	**Water**							
Batch R3717938								
WG2524861-3 DUP		**L1921908-3**						
Total Dissolved Solids		260	258		mg/L	0.8	20	09-MAY-17
WG2524861-2 LCS								
Total Dissolved Solids			97.2		%		85-115	09-MAY-17
WG2524861-1 MB								
Total Dissolved Solids			<10		mg/L		10	09-MAY-17
SOLIDS-TSS-WT	**Water**							
Batch R3719397								
WG2526570-3 DUP		**L1922850-2**						
Total Suspended Solids		40.6	37.0		mg/L	9.2	20	12-MAY-17
WG2526570-2 LCS								
Total Suspended Solids			98.8		%		85-115	12-MAY-17
WG2526570-1 MB								
Total Suspended Solids			<2.0		mg/L		2	12-MAY-17
TKN-WT	**Water**							
Batch R3719554								
WG2526876-3 DUP		**L1922973-1**						
Total Kjeldahl Nitrogen		1.49	1.43		mg/L	4.0	20	12-MAY-17
WG2526876-2 LCS								
Total Kjeldahl Nitrogen			98.9		%		75-125	12-MAY-17
WG2526876-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	12-MAY-17
WG2526876-4 MS		**L1922973-1**						
Total Kjeldahl Nitrogen			115.7		%		70-130	12-MAY-17

Quality Control Report

Workorder: L1922987 Report Date: 18-MAY-17

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

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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1922987-COFC

COC Number: 14 -

Page 1 of 1

Report To	Acct#13791
Company:	GHD LIMITED
Contact:	Jennifer Balkwill
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2
Phone:	519-884-0510

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2: See PO

Rush Turnaround Time (TAT) is not available for all tests

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	
Same as Report To	☑ Yes ☐ No
Copy of Invoice with Report	☐ Yes ☐ No
Company:	GHD LIMITED
Contact:	Jennifer Balkwill

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2:

Project Information

ALS Quote #:	
Job #:	44985
PO / AFE:	73506479
LSD:	

Oil and Gas Required Fields (client use)

Approver ID: Cost Center:
GL Account: Routing Code:
Activity Code:
Location:

ALS Lab Work Order # (lab use only): L1920987

ALS Contact: L.Ermeta Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (CR-CR6-IC-WT), Hardness calc				CLIENT SUPPLIED TEMPERATURE **	CLIENT SUPPLIED pH **	Number of Containers
1	STN6	8 5 17	1200	SW	R	R	R	R	R	R	R	R				8.5	7.99	
2	STN6A	8 5 17	1130	SW	R	R	R	R	R	R	R	R				9.3	7.49	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

Please fill in Client Supplied temperature and pH for Unionized NH3 calculation

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs Yes ☑ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C: 7-8

SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPTION (lab use only)	FINAL SHIPMENT RECEPTION (lab use only)
Released by: [signature] Date: 5/8/17 Time: 1220	Received by: Date: Time:	Received by: [initials] Date: 9 Aug 17 Time: 9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e v09 Front/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.

16

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

Date Received: 06-JUN-17
Report Date: 15-JUN-17 07:10 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1937837

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Laura Ermeta
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1937837-1 EQ POND DISCHARGE Sampled By: CLIENT on 05-JUN-17 @ 11:15 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.65		0.10	pH		08-JUN-17	R3742473
Temperature, Client	19.0		-50	Deg. C		08-JUN-17	R3742473
Physical Tests							
Conductivity	750		3.0	umhos/cm		07-JUN-17	R3742483
Hardness (as CaCO3)	290	HTC	10	mg/L		09-JUN-17	
pH	8.14		0.10	pH units		07-JUN-17	R3742483
Total Suspended Solids	4.3		2.0	mg/L	08-JUN-17	09-JUN-17	R3743309
Total Dissolved Solids	468	DLDS	20	mg/L		08-JUN-17	R3743614
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	150		10	mg/L		12-JUN-17	R3745428
Unionized ammonia	0.00224		0.00039	mg/L		09-JUN-17	
Ammonia, Total (as N)	0.114		0.020	mg/L		09-JUN-17	R3743604
Bromide (Br)	0.50		0.10	mg/L		08-JUN-17	R3743734
Chloride (Cl)	53.9		0.50	mg/L		08-JUN-17	R3743734
Fluoride (F)	0.550		0.020	mg/L		08-JUN-17	R3743734
Nitrate (as N)	0.084		0.020	mg/L		08-JUN-17	R3743734
Nitrite (as N)	<0.010		0.010	mg/L		08-JUN-17	R3743734
Total Kjeldahl Nitrogen	0.45		0.15	mg/L	08-JUN-17	08-JUN-17	R3742998
Phosphorus, Total	0.0112		0.0030	mg/L	08-JUN-17	09-JUN-17	R3743248
Sulfate (SO4)	156		0.30	mg/L		08-JUN-17	R3743734
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		08-JUN-17	R3743657
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.5		1.0	mg/L		07-JUN-17	R3743249
Total Metals							
Aluminum (Al)-Total	0.038		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Antimony (Sb)-Total	0.00042		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Arsenic (As)-Total	0.00134		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Barium (Ba)-Total	0.0429		0.00020	mg/L	08-JUN-17	08-JUN-17	R3743285
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Boron (B)-Total	0.173		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Cadmium (Cd)-Total	<0.000040	DLM	0.000040	mg/L	08-JUN-17	08-JUN-17	R3743285
Calcium (Ca)-Total	76.9		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Cobalt (Co)-Total	0.00020		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Copper (Cu)-Total	0.0011		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Iron (Fe)-Total	<0.050		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Lead (Pb)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Magnesium (Mg)-Total	23.9		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Manganese (Mn)-Total	0.0515		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		08-JUN-17	R3742747
Molybdenum (Mo)-Total	0.0535		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285

* 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
L1937837-1 EQ POND DISCHARGE Sampled By: CLIENT on 05-JUN-17 @ 11:15 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00270		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Potassium (K)-Total	4.48		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Selenium (Se)-Total	0.00143		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Silicon (Si)-Total	1.27		0.10	mg/L	08-JUN-17	08-JUN-17	R3743285
Silver (Ag)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Sodium (Na)-Total	36.9		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Strontium (Sr)-Total	0.624		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Thallium (Tl)-Total	0.000020		0.000010	mg/L	08-JUN-17	08-JUN-17	R3743285
Tin (Sn)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Vanadium (V)-Total	<0.00050		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Zinc (Zn)-Total	0.0032		0.0030	mg/L	08-JUN-17	08-JUN-17	R3743285
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		07-JUN-17	R3742595
Aggregate Organics							
COD	<10		10	mg/L		08-JUN-17	R3743258
Phenols (4AAP)	0.0025		0.0010	mg/L		13-JUN-17	R3746921
Volatile Organic Compounds							
Acetone	<20		20	ug/L		08-JUN-17	R3742493
Benzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Bromodichloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromoform	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromomethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Carbon tetrachloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
Chlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dibromochloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroform	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,2-Dibromoethane	<0.20		0.20	ug/L		08-JUN-17	R3742493
1,2-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,3-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,4-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichlorodifluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,1-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,2-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichloromethane	<2.0		2.0	ug/L		08-JUN-17	R3742493
1,2-Dichloropropane	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Ethylbenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493

* 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
L1937837-1 EQ POND DISCHARGE Sampled By: CLIENT on 05-JUN-17 @ 11:15 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Methyl Ethyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
Methyl Isobutyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
MTBE	<0.50		0.50	ug/L		08-JUN-17	R3742493
Styrene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Tetrachloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Toluene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichlorofluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Vinyl chloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
o-Xylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
m+p-Xylenes	<1.0		1.0	ug/L		08-JUN-17	R3742493
Xylenes (Total)	<1.1		1.1	ug/L		08-JUN-17	
Surrogate: 4-Bromofluorobenzene	102.4		70-130	%		08-JUN-17	R3742493
Surrogate: 1,4-Difluorobenzene	100.3		70-130	%		08-JUN-17	R3742493
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		08-JUN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3746383
Surrogate: Phenol d5	37.2		30-130	%	09-JUN-17	13-JUN-17	R3746383
Surrogate: 2,4,6-Tribromophenol	97.2		40-150	%	09-JUN-17	13-JUN-17	R3746383
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Acenaphthylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)pyrene	<0.050		0.050	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(b)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(ghi)perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(k)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
4-Chloroaniline	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2-Chlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Chrysene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,3-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,4-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956

* 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
L1937837-1 EQ POND DISCHARGE Sampled By: CLIENT on 05-JUN-17 @ 11:15 Matrix: WATER							
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Diethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dimethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluorene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobenzene	<0.040		0.040	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobutadiene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Naphthalene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pentachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Phenanthrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Surrogate: 2-Fluorobiphenyl	88.8		40-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: Nitrobenzene d5	90.7		50-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: p-Terphenyl d14	99.8		40-130	%	09-JUN-17	13-JUN-17	R3744956
Report Remarks : DLM - Cd LOR increased due to potential interference from Mo							
L1937837-2 WEST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 11:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.69		0.10	pH		08-JUN-17	R3742473
Temperature, Client	19.0		-50	Deg. C		08-JUN-17	R3742473
Physical Tests							
Conductivity	738		3.0	umhos/cm		07-JUN-17	R3742483
Hardness (as CaCO3)	282	HTC	10	mg/L		09-JUN-17	
pH	8.24		0.10	pH units		07-JUN-17	R3742483
Total Suspended Solids	2.1		2.0	mg/L	08-JUN-17	09-JUN-17	R3743309
Total Dissolved Solids	446	DLDS	20	mg/L		08-JUN-17	R3743614

* 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
L1937837-2 WEST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 11:30 Matrix: WATER							
Physical Tests							
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	146		10	mg/L		12-JUN-17	R3745428
Unionized ammonia	0.00705		0.00043	mg/L		09-JUN-17	
Ammonia, Total (as N)	0.327		0.020	mg/L		09-JUN-17	R3743604
Bromide (Br)	0.44		0.10	mg/L		08-JUN-17	R3743734
Chloride (Cl)	43.2		0.50	mg/L		08-JUN-17	R3743734
Fluoride (F)	0.622		0.020	mg/L		08-JUN-17	R3743734
Nitrate (as N)	<0.020		0.020	mg/L		08-JUN-17	R3743734
Nitrite (as N)	<0.010		0.010	mg/L		08-JUN-17	R3743734
Total Kjeldahl Nitrogen	0.70		0.15	mg/L	08-JUN-17	08-JUN-17	R3742998
Phosphorus, Total	0.0234		0.0030	mg/L	08-JUN-17	09-JUN-17	R3743248
Sulfate (SO4)	169		0.30	mg/L		08-JUN-17	R3743734
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		08-JUN-17	R3743657
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.1		1.0	mg/L		07-JUN-17	R3743249
Total Metals							
Aluminum (Al)-Total	0.226		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Antimony (Sb)-Total	0.00045		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Arsenic (As)-Total	0.00146		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Barium (Ba)-Total	0.0380		0.00020	mg/L	08-JUN-17	08-JUN-17	R3743285
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Boron (B)-Total	0.147		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Cadmium (Cd)-Total	<0.000040	DLM	0.000040	mg/L	08-JUN-17	08-JUN-17	R3743285
Calcium (Ca)-Total	72.8		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Cobalt (Co)-Total	0.00030		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Copper (Cu)-Total	0.0015		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Iron (Fe)-Total	0.225		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Lead (Pb)-Total	0.00020		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Magnesium (Mg)-Total	24.4		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Manganese (Mn)-Total	0.0236		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		08-JUN-17	R3742747
Molybdenum (Mo)-Total	0.0481		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Nickel (Ni)-Total	0.00307		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Potassium (K)-Total	4.34		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Selenium (Se)-Total	0.00149		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Silicon (Si)-Total	1.19		0.10	mg/L	08-JUN-17	08-JUN-17	R3743285
Silver (Ag)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Sodium (Na)-Total	37.0		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Strontium (Sr)-Total	0.597		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Thallium (Tl)-Total	0.000016		0.000010	mg/L	08-JUN-17	08-JUN-17	R3743285

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1937837-2 WEST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 11:30 Matrix: WATER							
Total Metals							
Tin (Sn)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Vanadium (V)-Total	0.00079		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	08-JUN-17	08-JUN-17	R3743285
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		07-JUN-17	R3742595
Aggregate Organics							
COD	17		10	mg/L		08-JUN-17	R3743258
Phenols (4AAP)	0.0039		0.0010	mg/L		13-JUN-17	R3746921
Volatile Organic Compounds							
Acetone	<20		20	ug/L		08-JUN-17	R3742493
Benzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Bromodichloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromoform	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromomethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Carbon tetrachloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
Chlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dibromochloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroform	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,2-Dibromoethane	<0.20		0.20	ug/L		08-JUN-17	R3742493
1,2-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,3-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,4-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichlorodifluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,1-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,2-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichloromethane	<2.0		2.0	ug/L		08-JUN-17	R3742493
1,2-Dichloropropane	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Ethylbenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
n-Hexane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Methyl Ethyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
Methyl Isobutyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
MTBE	<0.50		0.50	ug/L		08-JUN-17	R3742493
Styrene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Tetrachloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493

* 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
L1937837-2 WEST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 11:30 Matrix: WATER							
Volatile Organic Compounds							
Toluene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichlorofluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Vinyl chloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
o-Xylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
m+p-Xylenes	<1.0		1.0	ug/L		08-JUN-17	R3742493
Xylenes (Total)	<1.1		1.1	ug/L		08-JUN-17	
Surrogate: 4-Bromofluorobenzene	102.9		70-130	%		08-JUN-17	R3742493
Surrogate: 1,4-Difluorobenzene	99.6		70-130	%		08-JUN-17	R3742493
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		08-JUN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3746383
Surrogate: Phenol d5	40.4		30-130	%	09-JUN-17	13-JUN-17	R3746383
Surrogate: 2,4,6-Tribromophenol	100.4		40-150	%	09-JUN-17	13-JUN-17	R3746383
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Acenaphthylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)pyrene	<0.050		0.050	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(b)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(ghi)perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(k)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
4-Chloroaniline	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2-Chlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Chrysene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,3-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,4-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Diethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dimethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956

* 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
L1937837-2 WEST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 11:30 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluorene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobenzene	<0.040		0.040	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobutadiene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Naphthalene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pentachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Phenanthrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Surrogate: 2-Fluorobiphenyl	92.1		40-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: Nitrobenzene d5	94.3		50-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: p-Terphenyl d14	95.6		40-130	%	09-JUN-17	13-JUN-17	R3744956
Report Remarks : DLM - Cd LOR increased due to potential interference from Mo							
L1937837-3 EAST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 12:00 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.89		0.10	pH		08-JUN-17	R3742473
Temperature, Client	19.0		-50	Deg. C		08-JUN-17	R3742473
Physical Tests							
Conductivity	683		3.0	umhos/cm		07-JUN-17	R3742483
Hardness (as CaCO3)	262	HTC	10	mg/L		09-JUN-17	
pH	8.29		0.10	pH units		07-JUN-17	R3742483
Total Suspended Solids	9.3		2.0	mg/L	08-JUN-17	09-JUN-17	R3743309
Total Dissolved Solids	421	DLDS	20	mg/L		08-JUN-17	R3743614
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	117		10	mg/L		12-JUN-17	R3745428
Unionized ammonia	0.00496		0.00068	mg/L		12-JUN-17	
Ammonia, Total (as N)	0.147		0.020	mg/L		12-JUN-17	R3745497
Bromide (Br)	0.44		0.10	mg/L		08-JUN-17	R3743734
Chloride (Cl)	55.3		0.50	mg/L		08-JUN-17	R3743734
Fluoride (F)	0.529		0.020	mg/L		08-JUN-17	R3743734
Nitrate (as N)	<0.020		0.020	mg/L		08-JUN-17	R3743734

* 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
L1937837-3 EAST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 12:00 Matrix: WATER							
Anions and Nutrients							
Nitrite (as N)	<0.010		0.010	mg/L		08-JUN-17	R3743734
Total Kjeldahl Nitrogen	0.55		0.15	mg/L	08-JUN-17	08-JUN-17	R3742998
Phosphorus, Total	0.0196		0.0030	mg/L	08-JUN-17	09-JUN-17	R3743248
Sulfate (SO4)	154		0.30	mg/L		08-JUN-17	R3743734
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		08-JUN-17	R3743657
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.0		1.0	mg/L		07-JUN-17	R3743249
Total Metals							
Aluminum (Al)-Total	0.254		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Antimony (Sb)-Total	0.00054		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Arsenic (As)-Total	0.00119		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Barium (Ba)-Total	0.0396		0.00020	mg/L	08-JUN-17	08-JUN-17	R3743285
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Boron (B)-Total	0.112		0.010	mg/L	08-JUN-17	08-JUN-17	R3743285
Cadmium (Cd)-Total	<0.000040	DLM	0.000040	mg/L	08-JUN-17	08-JUN-17	R3743285
Calcium (Ca)-Total	67.6		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Cobalt (Co)-Total	0.00037		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Copper (Cu)-Total	0.0017		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Iron (Fe)-Total	0.240		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Lead (Pb)-Total	0.00035		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Magnesium (Mg)-Total	22.5		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Manganese (Mn)-Total	0.0467		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		08-JUN-17	R3742747
Molybdenum (Mo)-Total	0.0654		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Nickel (Ni)-Total	0.00211		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Potassium (K)-Total	4.80		0.050	mg/L	08-JUN-17	08-JUN-17	R3743285
Selenium (Se)-Total	0.00223		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Silicon (Si)-Total	1.81		0.10	mg/L	08-JUN-17	08-JUN-17	R3743285
Silver (Ag)-Total	<0.000050		0.000050	mg/L	08-JUN-17	08-JUN-17	R3743285
Sodium (Na)-Total	30.0		0.50	mg/L	08-JUN-17	08-JUN-17	R3743285
Strontium (Sr)-Total	0.625		0.0010	mg/L	08-JUN-17	08-JUN-17	R3743285
Thallium (Tl)-Total	0.000024		0.000010	mg/L	08-JUN-17	08-JUN-17	R3743285
Tin (Sn)-Total	<0.00010		0.00010	mg/L	08-JUN-17	08-JUN-17	R3743285
Vanadium (V)-Total	0.00103		0.00050	mg/L	08-JUN-17	08-JUN-17	R3743285
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	08-JUN-17	08-JUN-17	R3743285
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		07-JUN-17	R3742595
Aggregate Organics							
COD	12		10	mg/L		08-JUN-17	R3743258
Phenols (4AAP)	0.0031		0.0010	mg/L		13-JUN-17	R3746921

* 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
L1937837-3 EAST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 12:00 Matrix: WATER							
Aggregate Organics **Volatile Organic Compounds**							
Acetone	<20		20	ug/L		08-JUN-17	R3742493
Benzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Bromodichloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromoform	<1.0		1.0	ug/L		08-JUN-17	R3742493
Bromomethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Carbon tetrachloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
Chlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dibromochloromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Chloroform	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,2-Dibromoethane	<0.20		0.20	ug/L		08-JUN-17	R3742493
1,2-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,3-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,4-Dichlorobenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichlorodifluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
1,1-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,2-Dichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Dichloromethane	<2.0		2.0	ug/L		08-JUN-17	R3742493
1,2-Dichloropropane	<0.50		0.50	ug/L		08-JUN-17	R3742493
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Ethylbenzene	<0.50		0.50	ug/L		08-JUN-17	R3742493
n-Hexane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Methyl Ethyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
Methyl Isobutyl Ketone	<20		20	ug/L		08-JUN-17	R3742493
MTBE	<0.50		0.50	ug/L		08-JUN-17	R3742493
Styrene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Tetrachloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Toluene	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,1-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
1,1,2-Trichloroethane	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichloroethylene	<0.50		0.50	ug/L		08-JUN-17	R3742493
Trichlorofluoromethane	<1.0		1.0	ug/L		08-JUN-17	R3742493
Vinyl chloride	<0.50		0.50	ug/L		08-JUN-17	R3742493
o-Xylene	<0.50		0.50	ug/L		08-JUN-17	R3742493

* 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
L1937837-3 EAST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 12:00 Matrix: WATER							
Volatile Organic Compounds							
m+p-Xylenes	<1.0		1.0	ug/L		08-JUN-17	R3742493
Xylenes (Total)	<1.1		1.1	ug/L		08-JUN-17	
Surrogate: 4-Bromofluorobenzene	101.2		70-130	%		08-JUN-17	R3742493
Surrogate: 1,4-Difluorobenzene	100.1		70-130	%		08-JUN-17	R3742493
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		08-JUN-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3746383
Surrogate: Phenol d5	41.9		30-130	%	09-JUN-17	13-JUN-17	R3746383
Surrogate: 2,4,6-Tribromophenol	101.3		40-150	%	09-JUN-17	13-JUN-17	R3746383
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Acenaphthylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(a)pyrene	<0.050		0.050	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(b)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(ghi)perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Benzo(k)fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
4-Chloroaniline	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2-Chlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Chrysene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,3-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
1,4-Dichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-JUN-17	13-JUN-17	R3744956
Diethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Dimethylphthalate	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluoranthene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Fluorene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobenzene	<0.040		0.040	ug/L	09-JUN-17	13-JUN-17	R3744956
Hexachlorobutadiene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
1-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956

* 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
L1937837-3 EAST STORM WATER POND Sampled By: CLIENT on 05-JUN-17 @ 12:00 Matrix: WATER							
Semi-Volatile Organics							
2-Methylnaphthalene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
Naphthalene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pentachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Perylene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Phenanthrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
Pyrene	<0.20		0.20	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	09-JUN-17	13-JUN-17	R3744956
Surrogate: 2-Fluorobiphenyl	86.3		40-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: Nitrobenzene d5	89.6		50-130	%	09-JUN-17	13-JUN-17	R3744956
Surrogate: p-Terphenyl d14	96.8		40-130	%	09-JUN-17	13-JUN-17	R3744956
Report Remarks : DLM - Cd LOR increased due to potential interference from Mo							

* 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	Aluminum (Al)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Boron (B)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Copper (Cu)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Nickel (Ni)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Potassium (K)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Zinc (Zn)-Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Phosphorus, Total	MS-B	L1937837-1, -2, -3
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1937837-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
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	SW846 8270

Aqueous samples are extracted and extracts are analyzed on GC/MSD.

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 CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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, 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-N-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	ISO 14403-2

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

Reference Information

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.

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 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-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 deteremined 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). Holdtime for samples under this regulation is 28 days

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 though 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

Reference Information

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.

Quality Control Report

Workorder: L1937837 Report Date: 15-JUN-17

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 R3746383								
WG2544818-2 LCS								
2,3,6-Trichlorophenol			89.8		%		50-130	13-JUN-17
WG2544818-3 LCSD		**WG2544818-2**						
2,3,6-Trichlorophenol		89.8	82.8		%	8.1	50	13-JUN-17
WG2544818-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	13-JUN-17
Surrogate: Phenol d5			45.0		%		30-130	13-JUN-17
Surrogate: 2,4,6-Tribromophenol			96.4		%		40-150	13-JUN-17
625-WT	**Water**							
Batch R3744956								
WG2544818-2 LCS								
1-Methylnaphthalene			95.0		%		50-140	12-JUN-17
1,2-Dichlorobenzene			79.5		%		40-130	12-JUN-17
1,2,4-Trichlorobenzene			83.9		%		40-130	12-JUN-17
1,3-Dichlorobenzene			79.1		%		50-140	12-JUN-17
1,4-Dichlorobenzene			78.5		%		40-130	12-JUN-17
2-Chlorophenol			84.9		%		50-140	12-JUN-17
2-Methylnaphthalene			83.0		%		50-140	12-JUN-17
2,3,4,5-Tetrachlorophenol			106.8		%		50-140	12-JUN-17
2,3,4,6-Tetrachlorophenol			110.2		%		50-140	12-JUN-17
2,4-Dichlorophenol			98.8		%		50-140	12-JUN-17
2,4-Dimethylphenol			91.3		%		50-140	12-JUN-17
2,4-Dinitrophenol			124.2		%		40-140	12-JUN-17
2,4-Dinitrotoluene			100.8		%		50-140	12-JUN-17
2,4,5-Trichlorophenol			110.4		%		50-140	12-JUN-17
2,4,6-Trichlorophenol			103.9		%		50-140	12-JUN-17
2,6-Dinitrotoluene			91.2		%		50-140	12-JUN-17
3,3'-Dichlorobenzidine			76.1		%		50-140	12-JUN-17
4-Chloroaniline			63.4		%		30-140	12-JUN-17
Acenaphthene			81.3		%		50-140	12-JUN-17
Acenaphthylene			86.1		%		50-140	12-JUN-17
Anthracene			89.8		%		50-140	12-JUN-17
Benzo(a)anthracene			92.5		%		50-140	12-JUN-17
Benzo(a)pyrene			86.8		%		60-130	12-JUN-17
Benzo(b)fluoranthene			90.8		%		50-140	12-JUN-17

Quality Control Report

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 R3744956								
WG2544818-2 LCS								
Benzo(ghi)perylene			89.3		%		50-140	12-JUN-17
Benzo(k)fluoranthene			84.5		%		50-140	12-JUN-17
Bis(2-chloroethyl)ether			84.4		%		50-140	12-JUN-17
Bis(2-ethylhexyl)phthalate			89.8		%		50-140	12-JUN-17
Chrysene			88.2		%		50-140	12-JUN-17
Dibenzo(a,h)anthracene			89.0		%		50-140	12-JUN-17
Diethylphthalate			78.7		%		50-140	12-JUN-17
Dimethylphthalate			80.1		%		50-140	12-JUN-17
Fluoranthene			91.3		%		50-140	12-JUN-17
Fluorene			87.9		%		50-140	12-JUN-17
Hexachlorobenzene			84.9		%		40-130	12-JUN-17
Hexachlorobutadiene			80.0		%		40-130	12-JUN-17
Indeno(1,2,3-cd)pyrene			88.4		%		50-140	12-JUN-17
Naphthalene			83.6		%		50-140	12-JUN-17
Pentachlorophenol			125.8		%		50-140	12-JUN-17
Perylene			88.5		%		50-140	12-JUN-17
Phenanthrene			90.1		%		50-140	12-JUN-17
Pyrene			90.4		%		50-140	12-JUN-17
WG2544818-3 LCSD		**WG2544818-2**						
1-Methylnaphthalene		95.0	97.2		%	2.3	50	12-JUN-17
1,2-Dichlorobenzene		79.5	81.0		%	1.9	50	12-JUN-17
1,2,4-Trichlorobenzene		83.9	84.1		%	0.3	50	12-JUN-17
1,3-Dichlorobenzene		79.1	82.1		%	3.7	50	12-JUN-17
1,4-Dichlorobenzene		78.5	82.4		%	4.8	50	12-JUN-17
2-Chlorophenol		84.9	90.8		%	6.7	50	12-JUN-17
2-Methylnaphthalene		83.0	87.6		%	5.4	50	12-JUN-17
2,3,4,5-Tetrachlorophenol		106.8	111.1		%	4.0	50	12-JUN-17
2,3,4,6-Tetrachlorophenol		110.2	115.4		%	4.6	50	12-JUN-17
2,4-Dichlorophenol		98.8	103.7		%	4.8	50	12-JUN-17
2,4-Dimethylphenol		91.3	76.9		%	17	50	12-JUN-17
2,4-Dinitrophenol		124.2	128.9		%	3.6	50	12-JUN-17
2,4-Dinitrotoluene		100.8	108.1		%	7.0	50	12-JUN-17
2,4,5-Trichlorophenol		110.4	115.1		%	4.2	50	12-JUN-17

Quality Control Report

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 R3744956								
WG2544818-3 LCSD		**WG2544818-2**						
2,4,6-Trichlorophenol		103.9	108.4		%	4.3	50	12-JUN-17
2,6-Dinitrotoluene		91.2	93.7		%	2.7	50	12-JUN-17
3,3'-Dichlorobenzidine		76.1	70.9		%	7.0	50	12-JUN-17
4-Chloroaniline		63.4	60.4		%	4.9	50	12-JUN-17
Acenaphthene		81.3	85.5		%	5.0	50	12-JUN-17
Acenaphthylene		86.1	89.7		%	4.0	50	12-JUN-17
Anthracene		89.8	93.2		%	3.7	50	12-JUN-17
Benzo(a)anthracene		92.5	93.3		%	0.8	50	12-JUN-17
Benzo(a)pyrene		86.8	89.8		%	3.4	50	12-JUN-17
Benzo(b)fluoranthene		90.8	92.1		%	1.5	50	12-JUN-17
Benzo(ghi)perylene		89.3	90.2		%	1.0	50	12-JUN-17
Benzo(k)fluoranthene		84.5	86.0		%	1.7	50	12-JUN-17
Bis(2-chloroethyl)ether		84.4	89.2		%	5.5	50	12-JUN-17
Bis(2-ethylhexyl)phthalate		89.8	89.4		%	0.4	50	12-JUN-17
Chrysene		88.2	88.4		%	0.2	50	12-JUN-17
Dibenzo(a,h)anthracene		89.0	88.9		%	0.1	50	12-JUN-17
Diethylphthalate		78.7	84.4		%	7.0	50	12-JUN-17
Dimethylphthalate		80.1	83.8		%	4.5	50	12-JUN-17
Fluoranthene		91.3	92.6		%	1.3	50	12-JUN-17
Fluorene		87.9	92.8		%	5.4	50	12-JUN-17
Hexachlorobenzene		84.9	88.5		%	4.2	50	12-JUN-17
Hexachlorobutadiene		80.0	82.6		%	3.2	50	12-JUN-17
Indeno(1,2,3-cd)pyrene		88.4	89.2		%	0.9	50	12-JUN-17
Naphthalene		83.6	85.4		%	2.1	50	12-JUN-17
Pentachlorophenol		125.8	130.0		%	3.3	50	12-JUN-17
Perylene		88.5	92.4		%	4.3	50	12-JUN-17
Phenanthrene		90.1	93.6		%	3.8	50	12-JUN-17
Pyrene		90.4	92.5		%	2.3	50	12-JUN-17
WG2544818-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	12-JUN-17
1,2-Dichlorobenzene			<0.40		ug/L		0.4	12-JUN-17
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	12-JUN-17
1,3-Dichlorobenzene			<0.40		ug/L		0.4	12-JUN-17

Quality Control Report

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 R3744956								
WG2544818-1 MB								
1,4-Dichlorobenzene			<0.40		ug/L		0.4	12-JUN-17
2-Chlorophenol			<0.30		ug/L		0.3	12-JUN-17
2-Methylnaphthalene			<0.40		ug/L		0.4	12-JUN-17
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	12-JUN-17
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	12-JUN-17
2,4-Dichlorophenol			<0.30		ug/L		0.3	12-JUN-17
2,4-Dimethylphenol			<0.50		ug/L		0.5	12-JUN-17
2,4-Dinitrophenol			<1.0		ug/L		1	12-JUN-17
2,4-Dinitrotoluene			<0.40		ug/L		0.4	12-JUN-17
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	12-JUN-17
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	12-JUN-17
2,6-Dinitrotoluene			<0.40		ug/L		0.4	12-JUN-17
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	12-JUN-17
4-Chloroaniline			<0.40		ug/L		0.4	12-JUN-17
Acenaphthene			<0.20		ug/L		0.2	12-JUN-17
Acenaphthylene			<0.20		ug/L		0.2	12-JUN-17
Anthracene			<0.20		ug/L		0.2	12-JUN-17
Benzo(a)anthracene			<0.20		ug/L		0.2	12-JUN-17
Benzo(a)pyrene			<0.050		ug/L		0.05	12-JUN-17
Benzo(b)fluoranthene			<0.20		ug/L		0.2	12-JUN-17
Benzo(ghi)perylene			<0.20		ug/L		0.2	12-JUN-17
Benzo(k)fluoranthene			<0.20		ug/L		0.2	12-JUN-17
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	12-JUN-17
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	12-JUN-17
Chrysene			<0.20		ug/L		0.2	12-JUN-17
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	12-JUN-17
Diethylphthalate			<0.20		ug/L		0.2	12-JUN-17
Dimethylphthalate			<0.20		ug/L		0.2	12-JUN-17
Fluoranthene			<0.20		ug/L		0.2	12-JUN-17
Fluorene			<0.20		ug/L		0.2	12-JUN-17
Hexachlorobenzene			<0.040		ug/L		0.04	12-JUN-17
Hexachlorobutadiene			<0.20		ug/L		0.2	12-JUN-17
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	12-JUN-17

Quality Control Report

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 R3744956								
WG2544818-1 MB								
Naphthalene			<0.20		ug/L		0.2	12-JUN-17
Pentachlorophenol			<0.50		ug/L		0.5	12-JUN-17
Perylene			<0.20		ug/L		0.2	12-JUN-17
Phenanthrene			<0.20		ug/L		0.2	12-JUN-17
Pyrene			<0.20		ug/L		0.2	12-JUN-17
Surrogate: 2-Fluorobiphenyl			94.3		%		40-130	12-JUN-17
Surrogate: Nitrobenzene d5			95.0		%		50-130	12-JUN-17
Surrogate: p-Terphenyl d14			108.1		%		40-130	12-JUN-17
ALK-WT	**Water**							
Batch R3745428								
WG2546316-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			106.8		%		80-120	12-JUN-17
WG2546316-4 DUP		**L1937352-1**						
Alkalinity, Total (as CaCO3)		490	476		mg/L	3.0	20	12-JUN-17
WG2546316-2 LCS								
Alkalinity, Total (as CaCO3)			103.3		%		85-115	12-JUN-17
WG2546316-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	12-JUN-17
BR-IC-N-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	08-JUN-17
WG2544304-12 LCS								
Bromide (Br)			100.7		%		85-115	08-JUN-17
WG2544304-11 MB								
Bromide (Br)			<0.10		mg/L		0.1	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Bromide (Br)			97.2		%		75-125	08-JUN-17
C-DIS-ORG-WT	**Water**							
Batch R3743249								
WG2543807-3 DUP		**L1937837-3**						
Dissolved Organic Carbon		5.0	4.4		mg/L	11	20	07-JUN-17
WG2543807-2 LCS								
Dissolved Organic Carbon			98.7		%		80-120	07-JUN-17
WG2543807-1 MB								
Dissolved Organic Carbon			<1.0				1	

Quality Control Report

Client: GHD Limited (Waterloo)
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 R3743249								
WG2543807-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	07-JUN-17
WG2543807-4 MS		**L1937837-3**						
Dissolved Organic Carbon			113.9		%		70-130	07-JUN-17
CL-IC-N-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Chloride (Cl)		0.86	0.88		mg/L	3.0	20	08-JUN-17
WG2544304-12 LCS								
Chloride (Cl)			100.3		%		90-110	08-JUN-17
WG2544304-11 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Chloride (Cl)			99.2		%		75-125	08-JUN-17
CN-TOT-WT	**Water**							
Batch R3743657								
WG2543888-7 DUP		**L1937834-1**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	08-JUN-17
WG2543888-6 LCS								
Cyanide, Total			87.1		%		80-120	08-JUN-17
WG2543888-5 MB								
Cyanide, Total			<0.0020		mg/L		0.002	08-JUN-17
WG2543888-8 MS		**L1937834-1**						
Cyanide, Total			79.7		%		70-130	08-JUN-17
COD-T-WT	**Water**							
Batch R3743258								
WG2544707-3 DUP		**L1937793-3**						
COD		19	23		mg/L	18	20	08-JUN-17
WG2544707-2 LCS								
COD			95.3		%		85-115	08-JUN-17
WG2544707-1 MB								
COD			<10		mg/L		10	08-JUN-17
WG2544707-4 MS		**L1937793-3**						
COD			112.9		%		75-125	08-JUN-17
CR-CR6-IC-WT	**Water**							

Quality Control Report

Workorder: L1937837 Report Date: 15-JUN-17

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 R3742595								
WG2543579-4 DUP		**WG2543579-3**						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-JUN-17
WG2543579-2 LCS								
Chromium, Hexavalent			101.7		%		80-120	07-JUN-17
WG2543579-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	07-JUN-17
WG2543579-5 MS		**WG2543579-3**						
Chromium, Hexavalent			97.8		%		70-130	07-JUN-17
EC-WT	**Water**							
Batch R3742483								
WG2543317-16 DUP		**WG2543317-15**						
Conductivity		504	505		umhos/cm	0.2	10	07-JUN-17
WG2543317-13 LCS								
Conductivity			101.8		%		90-110	07-JUN-17
WG2543317-14 MB								
Conductivity			<3.0		umhos/cm		3	07-JUN-17
F-IC-N-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Fluoride (F)		0.024	0.025		mg/L	3.3	20	08-JUN-17
WG2544304-12 LCS								
Fluoride (F)			101.5		%		90-110	08-JUN-17
WG2544304-11 MB								
Fluoride (F)			<0.020		mg/L		0.02	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Fluoride (F)			100.9		%		75-125	08-JUN-17
HG-T-CVAA-WT	**Water**							
Batch R3742747								
WG2543865-4 DUP		**WG2543865-3**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-JUN-17
WG2543865-2 LCS								
Mercury (Hg)-Total			99.1		%		80-120	08-JUN-17
WG2543865-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	08-JUN-17
WG2543865-6 MS		**WG2543865-5**						
Mercury (Hg)-Total			95.8		%		70-130	08-JUN-17
MET-T-CCMS-WT	**Water**							

Quality Control Report

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 R3743285								
WG2543848-4 DUP		**WG2543848-3**						
Aluminum (Al)-Total		0.11	0.11		mg/L	3.2	20	08-JUN-17
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-JUN-17
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-JUN-17
Barium (Ba)-Total		0.0801	0.0832		mg/L	3.8	20	08-JUN-17
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-JUN-17
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-JUN-17
Boron (B)-Total		0.11	0.11		mg/L	2.0	20	08-JUN-17
Cadmium (Cd)-Total		<0.00020	0.00011		mg/L	11	20	08-JUN-17
Calcium (Ca)-Total		181	166		mg/L	8.7	20	08-JUN-17
Cobalt (Co)-Total		0.0015	0.0016		mg/L	1.2	20	08-JUN-17
Copper (Cu)-Total		0.013	0.014		mg/L	1.9	20	08-JUN-17
Iron (Fe)-Total		0.72	0.72		mg/L	0.0	20	08-JUN-17
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-JUN-17
Magnesium (Mg)-Total		47.4	46.6		mg/L	1.9	20	08-JUN-17
Manganese (Mn)-Total		0.197	0.197		mg/L	0.0	20	08-JUN-17
Molybdenum (Mo)-Total		0.0585	0.0567		mg/L	3.2	20	08-JUN-17
Nickel (Ni)-Total		0.344	0.346		mg/L	0.4	20	08-JUN-17
Potassium (K)-Total		50.7	47.8		mg/L	5.7	20	08-JUN-17
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-JUN-17
Silicon (Si)-Total		11.9	12.3		mg/L	2.9	20	08-JUN-17
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-JUN-17
Sodium (Na)-Total		185	195		mg/L	5.0	20	08-JUN-17
Strontium (Sr)-Total		1.86	1.74		mg/L	7.0	20	08-JUN-17
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-JUN-17
Tin (Sn)-Total		0.0246	0.0251		mg/L	1.9	20	08-JUN-17
Vanadium (V)-Total		0.0124	0.0124		mg/L	0.4	20	08-JUN-17
Zinc (Zn)-Total		0.467	0.466		mg/L	0.2	20	08-JUN-17
WG2543848-2 LCS								
Aluminum (Al)-Total			104.1		%		80-120	08-JUN-17
Antimony (Sb)-Total			97.6		%		80-120	08-JUN-17
Arsenic (As)-Total			101.4		%		80-120	08-JUN-17
Barium (Ba)-Total			104.7		%		80-120	08-JUN-17
Beryllium (Be)-Total			93.4		%		80-120	08-JUN-17

Quality Control Report

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 R3743285								
WG2543848-2 LCS								
Bismuth (Bi)-Total			99.97		%		80-120	08-JUN-17
Boron (B)-Total			96.0		%		80-120	08-JUN-17
Cadmium (Cd)-Total			101.1		%		80-120	08-JUN-17
Calcium (Ca)-Total			96.1		%		80-120	08-JUN-17
Cobalt (Co)-Total			100.9		%		80-120	08-JUN-17
Copper (Cu)-Total			100.1		%		80-120	08-JUN-17
Iron (Fe)-Total			98.9		%		80-120	08-JUN-17
Lead (Pb)-Total			102.4		%		80-120	08-JUN-17
Magnesium (Mg)-Total			106.0		%		80-120	08-JUN-17
Manganese (Mn)-Total			102.8		%		80-120	08-JUN-17
Molybdenum (Mo)-Total			97.4		%		80-120	08-JUN-17
Nickel (Ni)-Total			100.6		%		80-120	08-JUN-17
Potassium (K)-Total			102.4		%		80-120	08-JUN-17
Selenium (Se)-Total			98.3		%		80-120	08-JUN-17
Silicon (Si)-Total			110.2		%		60-140	08-JUN-17
Silver (Ag)-Total			95.8		%		80-120	08-JUN-17
Sodium (Na)-Total			109.0		%		80-120	08-JUN-17
Strontium (Sr)-Total			98.1		%		80-120	08-JUN-17
Thallium (Tl)-Total			95.4		%		80-120	08-JUN-17
Tin (Sn)-Total			97.4		%		80-120	08-JUN-17
Vanadium (V)-Total			104.2		%		80-120	08-JUN-17
Zinc (Zn)-Total			96.7		%		80-120	08-JUN-17
WG2543848-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.01	08-JUN-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-JUN-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-JUN-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	08-JUN-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	08-JUN-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-JUN-17
Boron (B)-Total			<0.010		mg/L		0.01	08-JUN-17
Cadmium (Cd)-Total			<0.000010		mg/L		0.00001	08-JUN-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	08-JUN-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-JUN-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	08-JUN-17

Quality Control Report

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 R3743285								
WG2543848-1 MB								
Iron (Fe)-Total			<0.050		mg/L		0.05	08-JUN-17
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-JUN-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	08-JUN-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	08-JUN-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-JUN-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-JUN-17
Potassium (K)-Total			<0.050		mg/L		0.05	08-JUN-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-JUN-17
Silicon (Si)-Total			<0.10		mg/L		0.1	08-JUN-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	08-JUN-17
Sodium (Na)-Total			<0.50		mg/L		0.5	08-JUN-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	08-JUN-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-JUN-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-JUN-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-JUN-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-JUN-17
WG2543848-5 MS		**WG2543848-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	08-JUN-17
Antimony (Sb)-Total			94.2		%		70-130	08-JUN-17
Arsenic (As)-Total			96.4		%		70-130	08-JUN-17
Barium (Ba)-Total			N/A	MS-B	%		-	08-JUN-17
Beryllium (Be)-Total			90.6		%		70-130	08-JUN-17
Bismuth (Bi)-Total			92.8		%		70-130	08-JUN-17
Boron (B)-Total			N/A	MS-B	%		-	08-JUN-17
Cadmium (Cd)-Total			95.6		%		70-130	08-JUN-17
Calcium (Ca)-Total			N/A	MS-B	%		-	08-JUN-17
Cobalt (Co)-Total			93.3		%		70-130	08-JUN-17
Copper (Cu)-Total			N/A	MS-B	%		-	08-JUN-17
Iron (Fe)-Total			N/A	MS-B	%		-	08-JUN-17
Lead (Pb)-Total			92.3		%		70-130	08-JUN-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	08-JUN-17
Manganese (Mn)-Total			N/A	MS-B	%		-	08-JUN-17
Molybdenum (Mo)-Total			N/A	MS-B	%		-	08-JUN-17
Nickel (Ni)-Total			N/A	MS-B	%		-	08-JUN-17

Quality Control Report

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 R3743285								
WG2543848-5 MS		**WG2543848-3**						
Potassium (K)-Total			N/A	MS-B	%		-	08-JUN-17
Selenium (Se)-Total			88.3		%		70-130	08-JUN-17
Silicon (Si)-Total			N/A	MS-B	%		-	08-JUN-17
Silver (Ag)-Total			90.0		%		70-130	08-JUN-17
Sodium (Na)-Total			N/A	MS-B	%		-	08-JUN-17
Strontium (Sr)-Total			N/A	MS-B	%		-	08-JUN-17
Thallium (Tl)-Total			91.7		%		70-130	08-JUN-17
Tin (Sn)-Total			81.3		%		70-130	08-JUN-17
Vanadium (V)-Total			94.4		%		70-130	08-JUN-17
Zinc (Zn)-Total			N/A	MS-B	%		-	08-JUN-17
NH3-WT	**Water**							
Batch R3743604								
WG2544876-11 DUP		**L1936945-4**						
Ammonia, Total (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	09-JUN-17
WG2544876-10 LCS								
Ammonia, Total (as N)			98.6		%		85-115	09-JUN-17
WG2544876-9 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	09-JUN-17
WG2544876-12 MS		**L1936945-4**						
Ammonia, Total (as N)			89.3		%		75-125	09-JUN-17
Batch R3745497								
WG2546331-3 DUP		**L1937994-1**						
Ammonia, Total (as N)		0.297	0.307		mg/L	3.4	20	12-JUN-17
WG2546331-2 LCS								
Ammonia, Total (as N)			103.4		%		85-115	12-JUN-17
WG2546331-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	12-JUN-17
WG2546331-4 MS		**L1937994-1**						
Ammonia, Total (as N)			105.0		%		75-125	12-JUN-17
NO2-IC-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	08-JUN-17
WG2544304-12 LCS								
Nitrite (as N)			100.3		%		70-130	08-JUN-17
WG2544304-11 MB								

Quality Control Report

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 R3743734								
WG2544304-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Nitrite (as N)			99.2		%		70-130	08-JUN-17
NO3-IC-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	25	08-JUN-17
WG2544304-12 LCS								
Nitrate (as N)			100.4		%		70-130	08-JUN-17
WG2544304-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Nitrate (as N)			98.7		%		70-130	08-JUN-17
P-T-COL-WT	**Water**							
Batch R3743248								
WG2544000-3 DUP		**L1937780-1**						
Phosphorus, Total		0.288	0.272		mg/L	5.6	20	08-JUN-17
WG2544000-2 LCS								
Phosphorus, Total			95.1		%		80-120	09-JUN-17
WG2544000-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	09-JUN-17
WG2544000-4 MS		**L1937780-1**						
Phosphorus, Total			N/A	MS-B	%		-	08-JUN-17
PH-WT	**Water**							
Batch R3742483								
WG2543317-16 DUP		**WG2543317-15**						
pH		7.96	7.99	J	pH units	0.03	0.2	07-JUN-17
WG2543317-13 LCS								
pH			6.98		pH units		6.9-7.1	07-JUN-17
PHENOLS-4AAP-WT	**Water**							
Batch R3746921								
WG2547918-19 DUP		**L1937095-8**						
Phenols (4AAP)		0.0037	0.0041		mg/L	9.7	20	13-JUN-17
WG2547918-18 LCS								
Phenols (4AAP)			114.1		%		85-115	13-JUN-17
WG2547918-17 MB								

Quality Control Report

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 R3746921								
WG2547918-17 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	13-JUN-17
WG2547918-20 MS		**L1937095-8**						
Phenols (4AAP)			100.9		%		75-125	13-JUN-17
SO4-IC-N-WT	**Water**							
Batch R3743734								
WG2544304-14 DUP		**WG2544304-13**						
Sulfate (SO4)		27.9	27.7		mg/L	0.8	20	08-JUN-17
WG2544304-12 LCS								
Sulfate (SO4)			100.7		%		90-110	08-JUN-17
WG2544304-11 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	08-JUN-17
WG2544304-15 MS		**WG2544304-13**						
Sulfate (SO4)			98.1		%		75-125	08-JUN-17
SOLIDS-TDS-WT	**Water**							
Batch R3743614								
WG2543871-3 DUP		**L1935763-1**						
Total Dissolved Solids		1600	1580		mg/L	1.2	20	08-JUN-17
WG2543871-2 LCS								
Total Dissolved Solids			98.0		%		85-115	08-JUN-17
WG2543871-1 MB								
Total Dissolved Solids			<10		mg/L		10	08-JUN-17
SOLIDS-TSS-WT	**Water**							
Batch R3743309								
WG2544466-3 DUP		**L1937815-23**						
Total Suspended Solids		339	350		mg/L	3.2	20	09-JUN-17
WG2544466-2 LCS								
Total Suspended Solids			98.2		%		85-115	09-JUN-17
WG2544466-1 MB								
Total Suspended Solids			<2.0		mg/L		2	09-JUN-17
TKN-WT	**Water**							
Batch R3742998								
WG2543878-3 DUP		**L1936089-6**						
Total Kjeldahl Nitrogen		8.13	8.85		mg/L	8.5	20	08-JUN-17
WG2543878-2 LCS								
Total Kjeldahl Nitrogen			101.9		%		75-125	08-JUN-17
WG2543878-1 MB								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT	**Water**							
Batch R3742998								
WG2543878-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	08-JUN-17
WG2543878-4 MS		**L1936089-6**						
Total Kjeldahl Nitrogen			N/A	MS-B	%		-	08-JUN-17
VOC-ROU-HS-WT	**Water**							
Batch R3742493								
WG2541988-4 DUP		**WG2541988-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	08-JUN-17
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	08-JUN-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Bromodichloromethane		8.6	8.6		ug/L	0.2	30	08-JUN-17
Bromoform		1.2	1.2		ug/L	0.0	30	08-JUN-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	08-JUN-17
Chloroform		7.3	7.2		ug/L	0.8	30	08-JUN-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Dibromochloromethane		7.6	7.7		ug/L	1.6	30	08-JUN-17
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	08-JUN-17
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	08-JUN-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17

Quality Control Report

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 R3742493								
WG2541988-4 DUP		**WG2541988-3**						
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	08-JUN-17
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	08-JUN-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	08-JUN-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
trans-1,2-Dichloroethylene		3.24	3.19		ug/L	1.6	30	08-JUN-17
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	08-JUN-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	08-JUN-17
WG2541988-1 LCS								
1,1,1,2-Tetrachloroethane			88.9		%		70-130	08-JUN-17
1,1,2,2-Tetrachloroethane			75.9		%		70-130	08-JUN-17
1,1,1-Trichloroethane			93.0		%		70-130	08-JUN-17
1,1,2-Trichloroethane			85.9		%		70-130	08-JUN-17
1,2-Dibromoethane			82.5		%		70-130	08-JUN-17
1,1-Dichloroethane			94.7		%		70-130	08-JUN-17
1,1-Dichloroethylene			92.7		%		70-130	08-JUN-17
1,2-Dichlorobenzene			92.2		%		70-130	08-JUN-17
1,2-Dichloroethane			85.1		%		70-130	08-JUN-17
1,2-Dichloropropane			89.0		%		70-130	08-JUN-17
1,3-Dichlorobenzene			95.4		%		70-130	08-JUN-17
1,4-Dichlorobenzene			94.7		%		70-130	08-JUN-17
Acetone			85.5		%		60-140	08-JUN-17
Benzene			94.2		%		70-130	08-JUN-17
Bromodichloromethane			86.9		%		70-130	08-JUN-17
Bromoform			76.5		%		70-130	08-JUN-17
Bromomethane			96.1		%		60-140	08-JUN-17
Carbon tetrachloride			96.5		%		70-130	08-JUN-17

Quality Control Report

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 R3742493								
WG2541988-1 LCS								
Chlorobenzene			92.4		%		70-130	08-JUN-17
Chloroethane			94.5		%		70-130	08-JUN-17
Chloroform			92.9		%		70-130	08-JUN-17
cis-1,2-Dichloroethylene			83.8		%		70-130	08-JUN-17
cis-1,3-Dichloropropene			88.0		%		70-130	08-JUN-17
Dibromochloromethane			87.6		%		70-130	08-JUN-17
Dichlorodifluoromethane			88.5		%		50-140	08-JUN-17
Dichloromethane			93.9		%		70-130	08-JUN-17
Ethylbenzene			94.7		%		70-130	08-JUN-17
m+p-Xylenes			94.4		%		70-130	08-JUN-17
Methyl Ethyl Ketone			80.7		%		60-140	08-JUN-17
Methyl Isobutyl Ketone			75.2		%		50-150	08-JUN-17
n-Hexane			111.1		%		70-130	08-JUN-17
MTBE			93.2		%		70-130	08-JUN-17
o-Xylene			92.8		%		70-130	08-JUN-17
Styrene			88.0		%		70-130	08-JUN-17
Tetrachloroethylene			102.6		%		70-130	08-JUN-17
Toluene			98.4		%		70-130	08-JUN-17
trans-1,2-Dichloroethylene			98.0		%		70-130	08-JUN-17
trans-1,3-Dichloropropene			86.2		%		70-130	08-JUN-17
Trichloroethylene			96.5		%		70-130	08-JUN-17
Trichlorofluoromethane			100.2		%		60-140	08-JUN-17
Vinyl chloride			90.8		%		60-140	08-JUN-17
WG2541988-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	08-JUN-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	08-JUN-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	08-JUN-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	08-JUN-17
1,2-Dibromoethane			<0.20		ug/L		0.2	08-JUN-17
1,1-Dichloroethane			<0.50		ug/L		0.5	08-JUN-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	08-JUN-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	08-JUN-17
1,2-Dichloroethane			<0.50		ug/L		0.5	08-JUN-17
1,2-Dichloropropane			<0.50		ug/L		0.5	08-JUN-17

Quality Control Report

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 R3742493								
WG2541988-2 MB								
1,3-Dichlorobenzene			<0.50		ug/L		0.5	08-JUN-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	08-JUN-17
Acetone			<20		ug/L		20	08-JUN-17
Benzene			<0.50		ug/L		0.5	08-JUN-17
Bromodichloromethane			<1.0		ug/L		1	08-JUN-17
Bromoform			<1.0		ug/L		1	08-JUN-17
Bromomethane			<0.50		ug/L		0.5	08-JUN-17
Carbon tetrachloride			<0.50		ug/L		0.5	08-JUN-17
Chlorobenzene			<0.50		ug/L		0.5	08-JUN-17
Chloroethane			<1.0		ug/L		1	08-JUN-17
Chloroform			<1.0		ug/L		1	08-JUN-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	08-JUN-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	08-JUN-17
Dibromochloromethane			<1.0		ug/L		1	08-JUN-17
Dichlorodifluoromethane			<1.0		ug/L		1	08-JUN-17
Dichloromethane			<2.0		ug/L		2	08-JUN-17
Ethylbenzene			<0.50		ug/L		0.5	08-JUN-17
m+p-Xylenes			<1.0		ug/L		1	08-JUN-17
Methyl Ethyl Ketone			<20		ug/L		20	08-JUN-17
Methyl Isobutyl Ketone			<20		ug/L		20	08-JUN-17
n-Hexane			<0.50		ug/L		0.5	08-JUN-17
MTBE			<0.50		ug/L		0.5	08-JUN-17
o-Xylene			<0.50		ug/L		0.5	08-JUN-17
Styrene			<0.50		ug/L		0.5	08-JUN-17
Tetrachloroethylene			<0.50		ug/L		0.5	08-JUN-17
Toluene			<0.50		ug/L		0.5	08-JUN-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	08-JUN-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	08-JUN-17
Trichloroethylene			<0.50		ug/L		0.5	08-JUN-17
Trichlorofluoromethane			<1.0		ug/L		1	08-JUN-17
Vinyl chloride			<0.50		ug/L		0.5	08-JUN-17
Surrogate: 1,4-Difluorobenzene			100.6		%		70-130	08-JUN-17
Surrogate: 4-Bromofluorobenzene			100.9		%		70-130	08-JUN-17

Quality Control Report

Workorder: L1937837 Report Date: 15-JUN-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1937837-COFC

COC Number: 14 -

Page 1 of 1

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format / Distri...	
Select Report Format:	☑PDF ☑EXCEL ☑EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐Criteria on Report - provide details below if box checked	
Select Distribution:	☑EMAIL ☐MAIL ☐FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)	
R	☑Regular (Standard TAT if received by 3 pm - business days)
P	☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
E	☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
E2	☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Specify Date Required for E2,E or P:	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑EMAIL ☐MAIL ☑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:	73506479	Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1937837-81 | ALS Contact: L.Ermeta | Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
	EQ Pond Discharge	05/06/17	11:15	Water	R	R	R	R	R	R	R	R	R	R		19	7.65	
	West Storm Water Pond	"	11:30	"	R	R	R	R	R	R	R	R	R	R		19	7.69	
	East Storm Water Pond	"	12:00	"	R	R	R	R	R	R	R	R	R	R		19	7.89	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	**Please fill in Client Supplied temperature and pH for Unionized NH3 calculation**
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			15.8		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: R Tobin	Date: June 6/17	Time: 13:30	Received by:	Date:	Time:	Received by:	Date: 7 JUN 17	Time: 900

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

NA-FM-0326e v09 Front04 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: 06-JUN-17
Report Date: 08-JUN-17 11:20 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L1936853

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Laura Ermeta
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1936853-1 EQ POND Sampled By: CLIENT on 05-JUN-17 @ 09:00 Matrix: WATER							
Microtox Physical Tests							
Turbidity	N/A				07-JUN-17	07-JUN-17	R3741249
Colour	Colourless				07-JUN-17	07-JUN-17	R3741249
Clarification	None				07-JUN-17	07-JUN-17	R3741249
Initial pH	7.6		0.10	pH	07-JUN-17	07-JUN-17	R3741249
Final pH	7.6		0.10	pH	07-JUN-17	07-JUN-17	R3741249
Lab Treatment	None				07-JUN-17	07-JUN-17	R3741249
Microtox Original							
EC50 (15min) Original	>100		1.0	%	07-JUN-17	07-JUN-17	R3741249
EC20 (15min) Original	>100		1.0	%	07-JUN-17	07-JUN-17	R3741249
EC50 (5min) Original	>100		1.0	%	07-JUN-17	07-JUN-17	R3741249
EC20 (5min) Original	>100		1.0	%	07-JUN-17	07-JUN-17	R3741249
Interpretation Original	NON TOXIC				07-JUN-17	07-JUN-17	R3741249

* 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-ED	Water	Microtox Original	ERCB Directive 050
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-ED	Water	Microtox Physical Tests	ERCB Directive 050

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, 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: L1936853 Report Date: 08-JUN-17

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-ED	**Water**							
Batch R3741249								
WG2542998-2 CRM		**PHENOL_ED**						
EC50 (5min) Original			16.3		mg/L		13-26	07-JUN-17
WG2542998-3 CRM		**PHENOL_ED**						
EC50 (5min) Original			19.6		mg/L		13-26	07-JUN-17
WG2542998-4 DUP		**L1936853-1**						
EC50 (15min) Original		>100	>100	RPD-NA	%	N/A		07-JUN-17
EC20 (15min) Original		>100	>100	RPD-NA	%	N/A		07-JUN-17
EC50 (5min) Original		>100	>100	RPD-NA	%	N/A		07-JUN-17
EC20 (5min) Original		>100	>100	RPD-NA	%	N/A		07-JUN-17
WG2542998-1 MB								
EC50 (15min) Original			PASS					07-JUN-17
EC20 (15min) Original			PASS					07-JUN-17
EC50 (5min) Original			60.8					07-JUN-17
EC20 (5min) Original			46.9					07-JUN-17

Quality Control Report

Workorder: L1936853 Report Date: 08-JUN-17

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 14 -

Affix ALS barcode label here (lab use only)

Page ____ of ____

Report To		Acct#13791
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2	
Phone:	519-884-0510	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)	
R	☑ Regular (Standard TAT if received by 3 pm - business days)
P	☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
E	☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
E2	☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Specify Date Required for E2,E or P:	

Invoice To	Same as Report To	☑ Yes ☐ No
	Copy of Invoice with Report	☐ Yes ☐ No
Company:	GHD LIMITED	
Contact:	Jennifer Balkwill	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	

Project Information	
ALS Quote #:	
Job #:	44985
PO / AFE:	73506479
LSD:	

Oil and Gas Required Fields (client use)		
Approver ID:		Cost Center:
GL Account:		Routing Code:
Activity Code:		
Location:		

ALS Lab Work Order # (lab use only): L1936853

ALS Contact: L.Ermeta

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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
	EQ POND	05/06/17	09:00	Water	✓			

L1936853-COFC

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☐ 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 ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal Intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
15.0					

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:
R Tobin	June 05/17	10:00

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:
RM	6/6/17	8:49

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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: 22-DEC-17
Report Date: 03-JAN-18 14:46 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2038895

Project P.O. #: 73506479
Job Reference: 44985
C of C Numbers:
Legal Site Desc:

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-1 EQ POND DISCHARGE Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.48		0.10	pH		28-DEC-17	R3922487
Temperature, Client	4.0		-50	Deg. C		28-DEC-17	R3922487
Physical Tests							
Conductivity	660		3.0	umhos/cm		28-DEC-17	R3923827
Hardness (as CaCO3)	264	HTC	10	mg/L		27-DEC-17	
pH	7.85		0.10	pH units		23-DEC-17	R3919528
Total Suspended Solids	<2.0		2.0	mg/L	27-DEC-17	28-DEC-17	R3922134
Total Dissolved Solids	414	DLDS	20	mg/L		24-DEC-17	R3922073
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	129		10	mg/L		27-DEC-17	R3922491
Unionized ammonia	0.00188		0.000084	mg/L		28-DEC-17	
Ammonia, Total (as N)	0.446		0.020	mg/L		27-DEC-17	R3922449
Bromide (Br)	0.32		0.10	mg/L		27-DEC-17	R3922127
Chloride (Cl)	55.0		0.50	mg/L		27-DEC-17	R3922127
Fluoride (F)	0.554		0.020	mg/L		27-DEC-17	R3922127
Nitrate (as N)	0.170		0.020	mg/L		27-DEC-17	R3922127
Nitrite (as N)	<0.010		0.010	mg/L		27-DEC-17	R3922127
Total Kjeldahl Nitrogen	0.72		0.15	mg/L	29-DEC-17	30-DEC-17	R3925649
Phosphorus, Total	0.0197		0.0030	mg/L	29-DEC-17	02-JAN-18	R3926197
Sulfate (SO4)	135		0.30	mg/L		27-DEC-17	R3922127
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		28-DEC-17	R3923514
Organic / Inorganic Carbon							
Dissolved Organic Carbon	4.3		1.0	mg/L		28-DEC-17	R3923366
Total Metals							
Aluminum (Al)-Total	0.147		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Antimony (Sb)-Total	0.00037		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Arsenic (As)-Total	0.00124		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Barium (Ba)-Total	0.0406		0.00020	mg/L	27-DEC-17	27-DEC-17	R3920129
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Boron (B)-Total	0.245		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Cadmium (Cd)-Total	<0.000030	DLUI	0.000030	mg/L	27-DEC-17	27-DEC-17	R3920129
Calcium (Ca)-Total	69.8		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Cobalt (Co)-Total	0.00017		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Copper (Cu)-Total	<0.0010		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Iron (Fe)-Total	0.132		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Lead (Pb)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Magnesium (Mg)-Total	21.7		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Manganese (Mn)-Total	0.0504		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		27-DEC-17	R3920341
Molybdenum (Mo)-Total	0.0429		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-1 EQ POND DISCHARGE Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.00256		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Potassium (K)-Total	4.91		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Selenium (Se)-Total	0.000702		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Silicon (Si)-Total	1.12		0.10	mg/L	27-DEC-17	27-DEC-17	R3920129
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Sodium (Na)-Total	33.3		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Strontium (Sr)-Total	0.588		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	27-DEC-17	27-DEC-17	R3920129
Tin (Sn)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Vanadium (V)-Total	0.00054		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	27-DEC-17	27-DEC-17	R3920129
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		29-DEC-17	R3926207
Aggregate Organics							
COD	11		10	mg/L		27-DEC-17	R3921519
Phenols (4AAP)	<0.0010		0.0010	mg/L		29-DEC-17	R3922531
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-DEC-17	R3919530
Benzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Bromodichloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Bromoform	<1.0		1.0	ug/L		27-DEC-17	R3919530
Bromomethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Carbon tetrachloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
Chlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dibromochloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroform	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,2-Dibromoethane	<0.20		0.20	ug/L		27-DEC-17	R3919530
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,1-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,2-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichloromethane	<2.0		2.0	ug/L		27-DEC-17	R3919530
1,2-Dichloropropane	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Ethylbenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-1 EQ POND DISCHARGE Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Methyl Ethyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
Methyl Isobutyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
MTBE	<0.50		0.50	ug/L		27-DEC-17	R3919530
Styrene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Tetrachloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Toluene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichlorofluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Vinyl chloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
o-Xylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
m+p-Xylenes	<1.0		1.0	ug/L		27-DEC-17	R3919530
Xylenes (Total)	<1.1		1.1	ug/L		27-DEC-17	
Surrogate: 4-Bromofluorobenzene	93.7		70-130	%		27-DEC-17	R3919530
Surrogate: 1,4-Difluorobenzene	95.4		70-130	%		27-DEC-17	R3919530
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-DEC-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	03-JAN-18	R3928172
Surrogate: 2,4,6-Tribromophenol	125.9		40-150	%	27-DEC-17	03-JAN-18	R3928172
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Acenaphthylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)pyrene	<0.050		0.050	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
4-Chloroaniline	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Chlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Chrysene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-1 EQ POND DISCHARGE Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dichlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Diethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dimethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dimethylphenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrophenol	<1.0		1.0	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluorene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Hexachlorobenzene	<0.040		0.040	ug/L	27-DEC-17	02-JAN-18	R3927289
Hexachlorobutadiene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Naphthalene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Pentachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Phenanthrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Surrogate: 2-Fluorobiphenyl	86.1		40-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: Nitrobenzene d5	88.3		50-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: p-Terphenyl d14	78.7		40-130	%	27-DEC-17	02-JAN-18	R3927289
L2038895-2 WEST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	8.03		0.10	pH		28-DEC-17	R3922487
Temperature, Client	4.0		-50	Deg. C		28-DEC-17	R3922487
Physical Tests							
Conductivity	666		3.0	umhos/cm		28-DEC-17	R3923827
Hardness (as CaCO3)	268	HTC	10	mg/L		27-DEC-17	
pH	8.23		0.10	pH units		23-DEC-17	R3919528
Total Suspended Solids	<2.0		2.0	mg/L	27-DEC-17	28-DEC-17	R3922134
Total Dissolved Solids	417	DLDS	20	mg/L		24-DEC-17	R3922073
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	140		10	mg/L		27-DEC-17	R3922491

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-2 WEST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Anions and Nutrients							
Unionized ammonia	0.00725		0.00030	mg/L		28-DEC-17	
Ammonia, Total (as N)	0.490		0.020	mg/L		27-DEC-17	R3922449
Bromide (Br)	0.36		0.10	mg/L		27-DEC-17	R3922127
Chloride (Cl)	54.3		0.50	mg/L		27-DEC-17	R3922127
Fluoride (F)	0.572		0.020	mg/L		27-DEC-17	R3922127
Nitrate (as N)	0.156		0.020	mg/L		27-DEC-17	R3922127
Nitrite (as N)	<0.010		0.010	mg/L		27-DEC-17	R3922127
Total Kjeldahl Nitrogen	0.83		0.15	mg/L	29-DEC-17	30-DEC-17	R3925649
Phosphorus, Total	0.0233		0.0030	mg/L	02-JAN-18	02-JAN-18	R3927983
Sulfate (SO4)	129		0.30	mg/L		27-DEC-17	R3922127
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		28-DEC-17	R3923514
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.5		1.0	mg/L		28-DEC-17	R3923366
Total Metals							
Aluminum (Al)-Total	0.162		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Antimony (Sb)-Total	0.00034		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Arsenic (As)-Total	0.00134		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Barium (Ba)-Total	0.0498		0.00020	mg/L	27-DEC-17	27-DEC-17	R3920129
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Boron (B)-Total	0.117		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Cadmium (Cd)-Total	<0.000030	DLUI	0.000030	mg/L	27-DEC-17	27-DEC-17	R3920129
Calcium (Ca)-Total	74.5		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Cobalt (Co)-Total	0.00020		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Copper (Cu)-Total	0.0010		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Iron (Fe)-Total	0.138		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Lead (Pb)-Total	0.00013		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Magnesium (Mg)-Total	19.9		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Manganese (Mn)-Total	0.0302		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		27-DEC-17	R3920341
Molybdenum (Mo)-Total	0.0386		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Nickel (Ni)-Total	0.00249		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Potassium (K)-Total	5.37		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Selenium (Se)-Total	0.000728		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Silicon (Si)-Total	1.69		0.10	mg/L	27-DEC-17	27-DEC-17	R3920129
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Sodium (Na)-Total	32.3		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Strontium (Sr)-Total	0.615		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Thallium (Tl)-Total	0.000011		0.000010	mg/L	27-DEC-17	27-DEC-17	R3920129
Tin (Sn)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Vanadium (V)-Total	0.00052		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-2 WEST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Total Metals							
Zinc (Zn)-Total	0.0140		0.0030	mg/L	27-DEC-17	27-DEC-17	R3920129
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		29-DEC-17	R3926207
Aggregate Organics							
COD	<10		10	mg/L		27-DEC-17	R3921519
Phenols (4AAP)	<0.0010		0.0010	mg/L		29-DEC-17	R3922531
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-DEC-17	R3919530
Benzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Bromodichloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Bromoform	<1.0		1.0	ug/L		27-DEC-17	R3919530
Bromomethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Carbon tetrachloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
Chlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dibromochloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroform	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,2-Dibromoethane	<0.20		0.20	ug/L		27-DEC-17	R3919530
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,1-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,2-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichloromethane	<2.0		2.0	ug/L		27-DEC-17	R3919530
1,2-Dichloropropane	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Ethylbenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
n-Hexane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Methyl Ethyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
Methyl Isobutyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
MTBE	<0.50		0.50	ug/L		27-DEC-17	R3919530
Styrene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Tetrachloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Toluene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530

* 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
L2038895-2 WEST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Volatile Organic Compounds							
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichlorofluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Vinyl chloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
o-Xylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
m+p-Xylenes	<1.0		1.0	ug/L		27-DEC-17	R3919530
Xylenes (Total)	<1.1		1.1	ug/L		27-DEC-17	
Surrogate: 4-Bromofluorobenzene	94.8		70-130	%		27-DEC-17	R3919530
Surrogate: 1,4-Difluorobenzene	94.4		70-130	%		27-DEC-17	R3919530
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-DEC-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	03-JAN-18	R3928172
Surrogate: 2,4,6-Tribromophenol	142.8		40-150	%	27-DEC-17	03-JAN-18	R3928172
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Acenaphthylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)pyrene	<0.050		0.050	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
4-Chloroaniline	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Chlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Chrysene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dichlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Diethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dimethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dimethylphenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrophenol	<1.0		1.0	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluorene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289

* 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
L2038895-2 WEST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Semi-Volatile Organics							
Hexachlorobenzene	<0.040		0.040	ug/L	27-DEC-17	02-JAN-18	R3927289
Hexachlorobutadiene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Naphthalene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Pentachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Phenanthrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Surrogate: 2-Fluorobiphenyl	104.2		40-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: Nitrobenzene d5	106.7		50-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: p-Terphenyl d14	98.8		40-130	%	27-DEC-17	02-JAN-18	R3927289
L2038895-3 EAST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Field Tests							
pH, Client Supplied	7.49		0.10	pH		28-DEC-17	R3922487
Temperature, Client	4.0		-50	Deg. C		28-DEC-17	R3922487
Physical Tests							
Conductivity	669		3.0	umhos/cm		28-DEC-17	R3923827
Hardness (as CaCO3)	272	HTC	10	mg/L		27-DEC-17	
pH	8.03		0.10	pH units		23-DEC-17	R3919528
Total Suspended Solids	2.9		2.0	mg/L	27-DEC-17	28-DEC-17	R3922134
Total Dissolved Solids	426	DLDS	20	mg/L		24-DEC-17	R3922073
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	149		10	mg/L		27-DEC-17	R3922491
Unionized ammonia	0.00586		0.00017	mg/L		28-DEC-17	
Ammonia, Total (as N)	1.36	DLHC	0.040	mg/L		27-DEC-17	R3922449
Bromide (Br)	0.29		0.10	mg/L		27-DEC-17	R3922127
Chloride (Cl)	48.6		0.50	mg/L		27-DEC-17	R3922127
Fluoride (F)	0.659		0.020	mg/L		27-DEC-17	R3922127
Nitrate (as N)	0.093		0.020	mg/L		27-DEC-17	R3922127
Nitrite (as N)	<0.010		0.010	mg/L		27-DEC-17	R3922127
Total Kjeldahl Nitrogen	2.12		0.15	mg/L	29-DEC-17	30-DEC-17	R3925649
Phosphorus, Total	0.0478		0.0030	mg/L	02-JAN-18	03-JAN-18	R3927799
Sulfate (SO4)	131		0.30	mg/L		27-DEC-17	R3922127

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-3 EAST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Anions and Nutrients							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		28-DEC-17	R3923514
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.4		1.0	mg/L		28-DEC-17	R3923366
Total Metals							
Aluminum (Al)-Total	0.351		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Antimony (Sb)-Total	0.00033		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Arsenic (As)-Total	0.00112		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Barium (Ba)-Total	0.0601		0.00020	mg/L	27-DEC-17	27-DEC-17	R3920129
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Boron (B)-Total	0.075		0.010	mg/L	27-DEC-17	27-DEC-17	R3920129
Cadmium (Cd)-Total	<0.000040	DLUI	0.000040	mg/L	27-DEC-17	27-DEC-17	R3920129
Calcium (Ca)-Total	78.8		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Cobalt (Co)-Total	0.00039		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Copper (Cu)-Total	0.0016		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Iron (Fe)-Total	0.325		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Lead (Pb)-Total	0.00032		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Magnesium (Mg)-Total	18.3		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Manganese (Mn)-Total	0.0564		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		27-DEC-17	R3920341
Molybdenum (Mo)-Total	0.0422		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Nickel (Ni)-Total	0.00317		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Potassium (K)-Total	7.91		0.050	mg/L	27-DEC-17	27-DEC-17	R3920129
Selenium (Se)-Total	0.00109		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Silicon (Si)-Total	2.39		0.10	mg/L	27-DEC-17	27-DEC-17	R3920129
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-DEC-17	27-DEC-17	R3920129
Sodium (Na)-Total	28.5		0.50	mg/L	27-DEC-17	27-DEC-17	R3920129
Strontium (Sr)-Total	0.605		0.0010	mg/L	27-DEC-17	27-DEC-17	R3920129
Thallium (Tl)-Total	0.000023		0.000010	mg/L	27-DEC-17	27-DEC-17	R3920129
Tin (Sn)-Total	<0.00010		0.00010	mg/L	27-DEC-17	27-DEC-17	R3920129
Vanadium (V)-Total	0.00089		0.00050	mg/L	27-DEC-17	27-DEC-17	R3920129
Zinc (Zn)-Total	0.0051		0.0030	mg/L	27-DEC-17	27-DEC-17	R3920129
Speciated Metals							
Chromium, Hexavalent	<0.0010		0.0010	mg/L		29-DEC-17	R3926207
Aggregate Organics							
COD	13		10	mg/L		27-DEC-17	R3921519
Phenols (4AAP)	<0.0010		0.0010	mg/L		29-DEC-17	R3922531
Volatile Organic Compounds							
Acetone	<20		20	ug/L		27-DEC-17	R3919530
Benzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Bromodichloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-3 EAST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Volatile Organic Compounds							
Bromoform	<1.0		1.0	ug/L		27-DEC-17	R3919530
Bromomethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Carbon tetrachloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
Chlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dibromochloromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Chloroform	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,2-Dibromoethane	<0.20		0.20	ug/L		27-DEC-17	R3919530
1,2-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,3-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,4-Dichlorobenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichlorodifluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
1,1-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,2-Dichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Dichloromethane	<2.0		2.0	ug/L		27-DEC-17	R3919530
1,2-Dichloropropane	<0.50		0.50	ug/L		27-DEC-17	R3919530
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Ethylbenzene	<0.50		0.50	ug/L		27-DEC-17	R3919530
n-Hexane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Methyl Ethyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
Methyl Isobutyl Ketone	<20		20	ug/L		27-DEC-17	R3919530
MTBE	<0.50		0.50	ug/L		27-DEC-17	R3919530
Styrene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Tetrachloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Toluene	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,1-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
1,1,2-Trichloroethane	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichloroethylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
Trichlorofluoromethane	<1.0		1.0	ug/L		27-DEC-17	R3919530
Vinyl chloride	<0.50		0.50	ug/L		27-DEC-17	R3919530
o-Xylene	<0.50		0.50	ug/L		27-DEC-17	R3919530
m+p-Xylenes	<1.0		1.0	ug/L		27-DEC-17	R3919530
Xylenes (Total)	<1.1		1.1	ug/L		27-DEC-17	
Surrogate: 4-Bromofluorobenzene	93.9		70-130	%		27-DEC-17	R3919530
Surrogate: 1,4-Difluorobenzene	94.4		70-130	%		27-DEC-17	R3919530

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2038895-3 EAST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Volatile Organic Compounds							
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-DEC-17	
Acid Extractables							
2,3,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	03-JAN-18	R3928172
Surrogate: 2,4,6-Tribromophenol	137.9		40-150	%	27-DEC-17	03-JAN-18	R3928172
Semi-Volatile Organics							
Acenaphthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Acenaphthylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(a)pyrene	<0.050		0.050	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(b)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(ghi)perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Benzo(k)fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
4-Chloroaniline	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Chlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Chrysene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dibenzo(a,h)anthracene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,3-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
1,4-Dichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dichlorophenol	<0.30		0.30	ug/L	27-DEC-17	02-JAN-18	R3927289
Diethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Dimethylphthalate	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dimethylphenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrophenol	<1.0		1.0	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,6-Dinitrotoluene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluoranthene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Fluorene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Hexachlorobenzene	<0.040		0.040	ug/L	27-DEC-17	02-JAN-18	R3927289
Hexachlorobutadiene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Indeno(1,2,3-cd)pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
1-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2-Methylnaphthalene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
Naphthalene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Pentachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Perylene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
Phenanthrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289

* 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
L2038895-3 EAST STORM WATER POND Sampled By: G. MONIZ on 20-DEC-17 @ 13:30 Matrix: WATER							
Semi-Volatile Organics							
Pyrene	<0.20		0.20	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,5-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,3,4,6-Tetrachlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,5-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
2,4,6-Trichlorophenol	<0.50		0.50	ug/L	27-DEC-17	02-JAN-18	R3927289
Surrogate: 2-Fluorobiphenyl	91.4		40-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: Nitrobenzene d5	93.0		50-130	%	27-DEC-17	02-JAN-18	R3927289
Surrogate: p-Terphenyl d14	80.6		40-130	%	27-DEC-17	02-JAN-18	R3927289

* 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	Aluminum (Al)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Copper (Cu)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L2038895-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L2038895-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L2038895-1, -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.

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.

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.

N-nitrosodiphenylamine is reported as diphenylamine. N-nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine. (EPA 8270D)

ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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, 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-N-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	ISO 14403-2

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

Reference Information

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 in Water 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 deteremined 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). Holdtime for samples under this regulation is 28 days

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

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

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-Norg D

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

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

Reference Information

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: L2038895 Report Date: 03-JAN-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 R3928172								
WG2690913-2 LCS								
2,3,6-Trichlorophenol			108.2		%		50-130	03-JAN-18
WG2690913-3 LCSD		**WG2690913-2**						
2,3,6-Trichlorophenol		108.2	94.6		%	13	50	03-JAN-18
WG2690913-1 MB								
2,3,6-Trichlorophenol			<0.50		ug/L		0.5	03-JAN-18
Surrogate: 2,4,6-Tribromophenol			106.5		%		40-150	03-JAN-18
625-WT	**Water**							
Batch R3927289								
WG2690913-2 LCS								
1-Methylnaphthalene			99.6		%		50-140	02-JAN-18
1,2-Dichlorobenzene			89.1		%		40-130	02-JAN-18
1,2,4-Trichlorobenzene			88.5		%		40-130	02-JAN-18
1,3-Dichlorobenzene			90.6		%		50-140	02-JAN-18
1,4-Dichlorobenzene			89.2		%		40-130	02-JAN-18
2-Chlorophenol			86.1		%		50-140	02-JAN-18
2-Methylnaphthalene			92.2		%		50-140	02-JAN-18
2,3,4,5-Tetrachlorophenol			106.4		%		50-140	02-JAN-18
2,3,4,6-Tetrachlorophenol			102.9		%		50-140	02-JAN-18
2,4-Dichlorophenol			100.4		%		50-140	02-JAN-18
2,4-Dimethylphenol			113.7		%		50-140	02-JAN-18
2,4-Dinitrophenol			121.7		%		40-140	02-JAN-18
2,4-Dinitrotoluene			112.4		%		50-140	02-JAN-18
2,4,5-Trichlorophenol			104.2		%		50-140	02-JAN-18
2,4,6-Trichlorophenol			99.6		%		50-140	02-JAN-18
2,6-Dinitrotoluene			107.7		%		50-140	02-JAN-18
3,3'-Dichlorobenzidine			56.3		%		50-140	02-JAN-18
4-Chloroaniline			45.6		%		30-140	02-JAN-18
Acenaphthene			90.7		%		50-140	02-JAN-18
Acenaphthylene			95.5		%		50-140	02-JAN-18
Anthracene			104.5		%		50-140	02-JAN-18
Benzo(a)anthracene			106.0		%		50-140	02-JAN-18
Benzo(a)pyrene			105.4		%		60-130	02-JAN-18
Benzo(b)fluoranthene			104.7		%		50-140	02-JAN-18
Benzo(ghi)perylene			71.3		%		50-140	02-JAN-18

Quality Control Report

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 R3927289								
WG2690913-2 LCS								
Benzo(k)fluoranthene			123.0		%		50-140	02-JAN-18
Bis(2-chloroethyl)ether			92.0		%		50-140	02-JAN-18
Bis(2-ethylhexyl)phthalate			77.6		%		50-140	02-JAN-18
Chrysene			103.8		%		50-140	02-JAN-18
Dibenzo(a,h)anthracene			75.7		%		50-140	02-JAN-18
Diethylphthalate			90.8		%		50-140	02-JAN-18
Dimethylphthalate			91.2		%		50-140	02-JAN-18
Fluoranthene			95.4		%		50-140	02-JAN-18
Fluorene			96.6		%		50-140	02-JAN-18
Hexachlorobenzene			93.1		%		40-130	02-JAN-18
Hexachlorobutadiene			85.3		%		40-130	02-JAN-18
Indeno(1,2,3-cd)pyrene			73.1		%		50-140	02-JAN-18
Naphthalene			92.7		%		50-140	02-JAN-18
Pentachlorophenol			123.6		%		50-140	02-JAN-18
Perylene			107.9		%		50-140	02-JAN-18
Phenanthrene			99.6		%		50-140	02-JAN-18
Pyrene			96.3		%		50-140	02-JAN-18
WG2690913-3 LCSD		**WG2690913-2**						
1-Methylnaphthalene		99.6	102.4		%	2.8	50	02-JAN-18
1,2-Dichlorobenzene		89.1	88.6		%	0.6	50	02-JAN-18
1,2,4-Trichlorobenzene		88.5	87.3		%	1.3	50	02-JAN-18
1,3-Dichlorobenzene		90.6	89.7		%	1.0	50	02-JAN-18
1,4-Dichlorobenzene		89.2	89.4		%	0.3	50	02-JAN-18
2-Chlorophenol		86.1	89.4		%	3.8	50	02-JAN-18
2-Methylnaphthalene		92.2	93.0		%	0.9	50	02-JAN-18
2,3,4,5-Tetrachlorophenol		106.4	108.5		%	2.0	50	02-JAN-18
2,3,4,6-Tetrachlorophenol		102.9	108.9		%	5.7	50	02-JAN-18
2,4-Dichlorophenol		100.4	102.1		%	1.6	50	02-JAN-18
2,4-Dimethylphenol		113.7	116.1		%	2.1	50	02-JAN-18
2,4-Dinitrophenol		121.7	102.0		%	18	50	02-JAN-18
2,4-Dinitrotoluene		112.4	116.4		%	3.5	50	02-JAN-18
2,4,5-Trichlorophenol		104.2	106.7		%	2.3	50	02-JAN-18
2,4,6-Trichlorophenol		99.6	103.0		%	3.4	50	02-JAN-18

Quality Control Report

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 R3927289								
WG2690913-3 LCSD		**WG2690913-2**						
2,6-Dinitrotoluene		107.7	111.1		%	3.2	50	02-JAN-18
3,3'-Dichlorobenzidine		56.3	48.9		%	14	50	02-JAN-18
4-Chloroaniline		45.6	44.2		%	3.0	50	02-JAN-18
Acenaphthene		90.7	92.7		%	2.2	50	02-JAN-18
Acenaphthylene		95.5	98.2		%	2.9	50	02-JAN-18
Anthracene		104.5	106.9		%	2.3	50	02-JAN-18
Benzo(a)anthracene		106.0	107.3		%	1.2	50	02-JAN-18
Benzo(a)pyrene		105.4	105.5		%	0.1	50	02-JAN-18
Benzo(b)fluoranthene		104.7	107.8		%	2.9	50	02-JAN-18
Benzo(ghi)perylene		71.3	75.0		%	5.1	50	02-JAN-18
Benzo(k)fluoranthene		123.0	115.3		%	6.5	50	02-JAN-18
Bis(2-chloroethyl)ether		92.0	96.6		%	4.8	50	02-JAN-18
Bis(2-ethylhexyl)phthalate		77.6	81.7		%	5.2	50	02-JAN-18
Chrysene		103.8	105.9		%	2.0	50	02-JAN-18
Dibenzo(a,h)anthracene		75.7	78.4		%	3.6	50	02-JAN-18
Diethylphthalate		90.8	96.6		%	6.2	50	02-JAN-18
Dimethylphthalate		91.2	95.7		%	4.8	50	02-JAN-18
Fluoranthene		95.4	98.9		%	3.6	50	02-JAN-18
Fluorene		96.6	100.6		%	4.0	50	02-JAN-18
Hexachlorobenzene		93.1	98.4		%	5.5	50	02-JAN-18
Hexachlorobutadiene		85.3	85.1		%	0.2	50	02-JAN-18
Indeno(1,2,3-cd)pyrene		73.1	72.8		%	0.4	50	02-JAN-18
Naphthalene		92.7	93.1		%	0.5	50	02-JAN-18
Pentachlorophenol		123.6	117.2		%	5.3	50	02-JAN-18
Perylene		107.9	109.6		%	1.6	50	02-JAN-18
Phenanthrene		99.6	103.9		%	4.2	50	02-JAN-18
Pyrene		96.3	99.1		%	2.9	50	02-JAN-18
WG2690913-1 MB								
1-Methylnaphthalene			<0.40		ug/L		0.4	02-JAN-18
1,2-Dichlorobenzene			<0.40		ug/L		0.4	02-JAN-18
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	02-JAN-18
1,3-Dichlorobenzene			<0.40		ug/L		0.4	02-JAN-18
1,4-Dichlorobenzene			<0.40		ug/L		0.4	02-JAN-18

Quality Control Report

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 R3927289								
WG2690913-1 MB								
2-Chlorophenol			<0.30		ug/L		0.3	02-JAN-18
2-Methylnaphthalene			<0.40		ug/L		0.4	02-JAN-18
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	02-JAN-18
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	02-JAN-18
2,4-Dichlorophenol			<0.30		ug/L		0.3	02-JAN-18
2,4-Dimethylphenol			<0.50		ug/L		0.5	02-JAN-18
2,4-Dinitrophenol			<1.0		ug/L		1	02-JAN-18
2,4-Dinitrotoluene			<0.40		ug/L		0.4	02-JAN-18
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	02-JAN-18
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	02-JAN-18
2,6-Dinitrotoluene			<0.40		ug/L		0.4	02-JAN-18
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	02-JAN-18
4-Chloroaniline			<0.40		ug/L		0.4	02-JAN-18
Acenaphthene			<0.20		ug/L		0.2	02-JAN-18
Acenaphthylene			<0.20		ug/L		0.2	02-JAN-18
Anthracene			<0.20		ug/L		0.2	02-JAN-18
Benzo(a)anthracene			<0.20		ug/L		0.2	02-JAN-18
Benzo(a)pyrene			<0.050		ug/L		0.05	02-JAN-18
Benzo(b)fluoranthene			<0.20		ug/L		0.2	02-JAN-18
Benzo(ghi)perylene			<0.20		ug/L		0.2	02-JAN-18
Benzo(k)fluoranthene			<0.20		ug/L		0.2	02-JAN-18
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	02-JAN-18
Bis(2-ethylhexyl)phthalate			<1.0		ug/L		1	02-JAN-18
Chrysene			<0.20		ug/L		0.2	02-JAN-18
Dibenzo(a,h)anthracene			<0.20		ug/L		0.2	02-JAN-18
Diethylphthalate			<0.20		ug/L		0.2	02-JAN-18
Dimethylphthalate			<0.20		ug/L		0.2	02-JAN-18
Fluoranthene			<0.20		ug/L		0.2	02-JAN-18
Fluorene			<0.20		ug/L		0.2	02-JAN-18
Hexachlorobenzene			<0.040		ug/L		0.04	02-JAN-18
Hexachlorobutadiene			<0.20		ug/L		0.2	02-JAN-18
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	02-JAN-18
Naphthalene			<0.20		ug/L		0.2	02-JAN-18

Quality Control Report

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 R3927289								
WG2690913-1 MB								
Pentachlorophenol			<0.50		ug/L		0.5	02-JAN-18
Perylene			<0.20		ug/L		0.2	02-JAN-18
Phenanthrene			<0.20		ug/L		0.2	02-JAN-18
Pyrene			<0.20		ug/L		0.2	02-JAN-18
Surrogate: 2-Fluorobiphenyl			82.9		%		40-130	02-JAN-18
Surrogate: Nitrobenzene d5			89.4		%		50-130	02-JAN-18
Surrogate: p-Terphenyl d14			95.7		%		40-130	02-JAN-18
ALK-WT	**Water**							
Batch R3922491								
WG2690625-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			96.8		%		80-120	27-DEC-17
WG2690625-4 DUP		**L2038275-1**						
Alkalinity, Total (as CaCO3)		246	241		mg/L	2.1	20	27-DEC-17
WG2690625-2 LCS								
Alkalinity, Total (as CaCO3)			96.4		%		85-115	27-DEC-17
WG2690625-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	27-DEC-17
BR-IC-N-WT	**Water**							
Batch R3922127								
WG2690516-10 DUP		**L2038825-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-DEC-17
WG2690516-7 LCS								
Bromide (Br)			103.1		%		85-115	27-DEC-17
WG2690516-6 MB								
Bromide (Br)			<0.10		mg/L		0.1	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Bromide (Br)			98.9		%		75-125	27-DEC-17
C-DIS-ORG-WT	**Water**							
Batch R3923366								
WG2691491-3 DUP		**L2038895-2**						
Dissolved Organic Carbon		5.5	5.3		mg/L	5.0	20	28-DEC-17
WG2691491-2 LCS								
Dissolved Organic Carbon			100.6		%		80-120	28-DEC-17
WG2691491-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	28-DEC-17
WG2691491-4 MS		**L2038895-2**						

Quality Control Report

Client: GHD Limited (Waterloo)
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 R3923366								
WG2691491-4 MS		**L2038895-2**						
Dissolved Organic Carbon			95.7		%		70-130	28-DEC-17
CL-IC-N-WT	**Water**							
Batch R3922127								
WG2690516-10 DUP		**L2038825-3**						
Chloride (Cl)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	27-DEC-17
WG2690516-7 LCS								
Chloride (Cl)			99.5		%		90-110	27-DEC-17
WG2690516-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Chloride (Cl)			98.6		%		75-125	27-DEC-17
CN-TOT-WT	**Water**							
Batch R3923514								
WG2690993-3 DUP		**L2038580-1**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	28-DEC-17
WG2690993-2 LCS								
Cyanide, Total			95.2		%		80-120	28-DEC-17
WG2690993-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	28-DEC-17
WG2690993-4 MS		**L2038580-1**						
Cyanide, Total			70.8		%		70-130	28-DEC-17
COD-T-WT	**Water**							
Batch R3921519								
WG2690882-3 DUP		**L2038580-1**						
COD		72	71		mg/L	0.3	20	27-DEC-17
WG2690882-2 LCS								
COD			99.9		%		85-115	27-DEC-17
WG2690882-1 MB								
COD			<10		mg/L		10	27-DEC-17
WG2690882-4 MS		**L2038580-1**						
COD			90.7		%		75-125	27-DEC-17
CR-CR6-IC-WT	**Water**							

Quality Control Report

Workorder: L2038895 Report Date: 03-JAN-18

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 R3926207								
WG2691664-4 DUP		**WG2691664-3**						
Chromium, Hexavalent		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-DEC-17
WG2691664-2 LCS								
Chromium, Hexavalent			98.2		%		80-120	29-DEC-17
WG2691664-1 MB								
Chromium, Hexavalent			<0.0010		mg/L		0.001	29-DEC-17
WG2691664-5 MS		**WG2691664-3**						
Chromium, Hexavalent			101.3		%		70-130	29-DEC-17
EC-WT	**Water**							
Batch R3923827								
WG2690944-4 DUP		**WG2690944-3**						
Conductivity		1190	1180		umhos/cm	0.5	10	28-DEC-17
WG2690944-2 LCS								
Conductivity			97.9		%		90-110	28-DEC-17
WG2690944-1 MB								
Conductivity			<3.0		umhos/cm		3	28-DEC-17
F-IC-N-WT	**Water**							
Batch R3922127								
WG2690516-10 DUP		**L2038825-3**						
Fluoride (F)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-DEC-17
WG2690516-7 LCS								
Fluoride (F)			98.6		%		90-110	27-DEC-17
WG2690516-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Fluoride (F)			99.0		%		75-125	27-DEC-17
HG-T-CVAA-WT	**Water**							
Batch R3920341								
WG2690500-4 DUP		**WG2690500-3**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-DEC-17
WG2690500-2 LCS								
Mercury (Hg)-Total			97.5		%		80-120	27-DEC-17
WG2690500-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	27-DEC-17
WG2690500-6 MS		**WG2690500-5**						
Mercury (Hg)-Total			92.5		%		70-130	27-DEC-17
MET-T-CCMS-WT	**Water**							

Quality Control Report

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 R3920129								
WG2690356-4 DUP		**WG2690356-3**						
Aluminum (Al)-Total		0.102	0.0979		mg/L	4.4	20	27-DEC-17
Antimony (Sb)-Total		0.00036	0.00035		mg/L	3.6	20	27-DEC-17
Arsenic (As)-Total		0.00055	0.00055		mg/L	0.5	20	27-DEC-17
Barium (Ba)-Total		0.0222	0.0218		mg/L	1.6	20	27-DEC-17
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-DEC-17
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-DEC-17
Boron (B)-Total		0.019	0.019		mg/L	2.5	20	27-DEC-17
Cadmium (Cd)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	27-DEC-17
Calcium (Ca)-Total		32.7	32.0		mg/L	2.1	20	27-DEC-17
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-DEC-17
Copper (Cu)-Total		0.0260	0.0253		mg/L	2.6	20	27-DEC-17
Iron (Fe)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-DEC-17
Lead (Pb)-Total		0.000142	0.000138		mg/L	2.6	20	27-DEC-17
Magnesium (Mg)-Total		8.47	8.16		mg/L	3.7	20	27-DEC-17
Manganese (Mn)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-DEC-17
Molybdenum (Mo)-Total		0.00114	0.00111		mg/L	2.6	20	27-DEC-17
Nickel (Ni)-Total		0.00067	0.00066		mg/L	2.9	20	27-DEC-17
Potassium (K)-Total		1.53	1.52		mg/L	0.2	20	27-DEC-17
Selenium (Se)-Total		0.000152	0.000135		mg/L	12	20	27-DEC-17
Silicon (Si)-Total		0.43	0.43		mg/L	0.3	20	27-DEC-17
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-DEC-17
Sodium (Na)-Total		15.5	15.2		mg/L	1.8	20	27-DEC-17
Strontium (Sr)-Total		0.177	0.172		mg/L	2.7	20	27-DEC-17
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-DEC-17
Tin (Sn)-Total		0.00016	0.00015		mg/L	3.8	20	27-DEC-17
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-DEC-17
Zinc (Zn)-Total		0.0034	0.0034		mg/L	2.1	20	27-DEC-17
WG2690356-2 LCS								
Aluminum (Al)-Total			99.1		%		80-120	27-DEC-17
Antimony (Sb)-Total			97.8		%		80-120	27-DEC-17
Arsenic (As)-Total			99.0		%		80-120	27-DEC-17
Barium (Ba)-Total			104.5		%		80-120	27-DEC-17
Beryllium (Be)-Total			89.6		%		80-120	27-DEC-17

Quality Control Report

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 R3920129								
WG2690356-2 LCS								
Bismuth (Bi)-Total			98.7		%		80-120	27-DEC-17
Boron (B)-Total			90.0		%		80-120	27-DEC-17
Cadmium (Cd)-Total			102.1		%		80-120	27-DEC-17
Calcium (Ca)-Total			99.9		%		80-120	27-DEC-17
Cobalt (Co)-Total			98.4		%		80-120	27-DEC-17
Copper (Cu)-Total			98.4		%		80-120	27-DEC-17
Iron (Fe)-Total			101.7		%		80-120	27-DEC-17
Lead (Pb)-Total			99.8		%		80-120	27-DEC-17
Magnesium (Mg)-Total			106.2		%		80-120	27-DEC-17
Manganese (Mn)-Total			102.4		%		80-120	27-DEC-17
Molybdenum (Mo)-Total			99.6		%		80-120	27-DEC-17
Nickel (Ni)-Total			98.3		%		80-120	27-DEC-17
Potassium (K)-Total			98.0		%		80-120	27-DEC-17
Selenium (Se)-Total			99.3		%		80-120	27-DEC-17
Silicon (Si)-Total			105.5		%		60-140	27-DEC-17
Silver (Ag)-Total			100.1		%		80-120	27-DEC-17
Sodium (Na)-Total			100.3		%		80-120	27-DEC-17
Strontium (Sr)-Total			95.1		%		80-120	27-DEC-17
Thallium (Tl)-Total			98.7		%		80-120	27-DEC-17
Tin (Sn)-Total			97.5		%		80-120	27-DEC-17
Vanadium (V)-Total			100.5		%		80-120	27-DEC-17
Zinc (Zn)-Total			99.1		%		80-120	27-DEC-17
WG2690356-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	27-DEC-17
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-DEC-17
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-DEC-17
Barium (Ba)-Total			<0.00020		mg/L		0.0002	27-DEC-17
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	27-DEC-17
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-DEC-17
Boron (B)-Total			<0.010		mg/L		0.01	27-DEC-17
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	27-DEC-17
Calcium (Ca)-Total			<0.50		mg/L		0.5	27-DEC-17
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-DEC-17
Copper (Cu)-Total			<0.0010		mg/L		0.001	27-DEC-17

Quality Control Report

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 R3920129								
WG2690356-1 MB								
Iron (Fe)-Total			<0.050		mg/L		0.05	27-DEC-17
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-DEC-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	27-DEC-17
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	27-DEC-17
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-DEC-17
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-DEC-17
Potassium (K)-Total			<0.050		mg/L		0.05	27-DEC-17
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-DEC-17
Silicon (Si)-Total			<0.10		mg/L		0.1	27-DEC-17
Silver (Ag)-Total			<0.000050		mg/L		0.00005	27-DEC-17
Sodium (Na)-Total			<0.50		mg/L		0.5	27-DEC-17
Strontium (Sr)-Total			<0.0010		mg/L		0.001	27-DEC-17
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-DEC-17
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-DEC-17
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-DEC-17
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-DEC-17
WG2690356-5 MS		**WG2690356-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	27-DEC-17
Antimony (Sb)-Total			103.3		%		70-130	27-DEC-17
Arsenic (As)-Total			100.5		%		70-130	27-DEC-17
Barium (Ba)-Total			N/A	MS-B	%		-	27-DEC-17
Beryllium (Be)-Total			89.4		%		70-130	27-DEC-17
Bismuth (Bi)-Total			89.1		%		70-130	27-DEC-17
Cadmium (Cd)-Total			97.3		%		70-130	27-DEC-17
Calcium (Ca)-Total			N/A	MS-B	%		-	27-DEC-17
Cobalt (Co)-Total			107.0		%		70-130	27-DEC-17
Copper (Cu)-Total			N/A	MS-B	%		-	27-DEC-17
Iron (Fe)-Total			129.9		%		70-130	27-DEC-17
Lead (Pb)-Total			89.9		%		70-130	27-DEC-17
Magnesium (Mg)-Total			N/A	MS-B	%		-	27-DEC-17
Manganese (Mn)-Total			129.0		%		70-130	27-DEC-17
Molybdenum (Mo)-Total			129.5		%		70-130	27-DEC-17
Selenium (Se)-Total			99.0		%		70-130	27-DEC-17
Silver (Ag)-Total			93.6		%		70-130	27-DEC-17

Quality Control Report

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 R3920129								
WG2690356-5 MS		**WG2690356-3**						
Sodium (Na)-Total			N/A	MS-B	%		-	27-DEC-17
Strontium (Sr)-Total			N/A	MS-B	%		-	27-DEC-17
Thallium (Tl)-Total			89.0		%		70-130	27-DEC-17
Tin (Sn)-Total			98.9		%		70-130	27-DEC-17
Vanadium (V)-Total			102.9		%		70-130	27-DEC-17
NH3-WT	**Water**							
Batch R3922449								
WG2690725-11 DUP		**L2038895-1**						
Ammonia, Total (as N)		0.446	0.430		mg/L	3.8	20	27-DEC-17
WG2690725-7 DUP		**L2037595-1**						
Ammonia, Total (as N)		463	551		mg/L	18	20	27-DEC-17
WG2690725-10 LCS								
Ammonia, Total (as N)			107.3		%		85-115	27-DEC-17
WG2690725-6 LCS								
Ammonia, Total (as N)			107.5		%		85-115	27-DEC-17
WG2690725-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	27-DEC-17
WG2690725-9 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	27-DEC-17
WG2690725-12 MS		**L2038895-1**						
Ammonia, Total (as N)			N/A	MS-B	%		-	27-DEC-17
WG2690725-8 MS		**L2037595-1**						
Ammonia, Total (as N)			N/A	MS-B	%		-	27-DEC-17
NO2-IC-WT	**Water**							
Batch R3922127								
WG2690516-10 DUP		**L2038825-3**						
Nitrite (as N)		<0.10	<0.10	RPD-NA	mg/L	N/A	25	27-DEC-17
WG2690516-7 LCS								
Nitrite (as N)			97.2		%		70-130	27-DEC-17
WG2690516-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Nitrite (as N)			97.6		%		70-130	27-DEC-17
NO3-IC-WT	**Water**							

Quality Control Report

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 R3922127								
WG2690516-10 DUP		**L2038825-3**						
Nitrate (as N)		<0.10	<0.10	RPD-NA	mg/L	N/A	25	27-DEC-17
WG2690516-7 LCS								
Nitrate (as N)			99.4		%		70-130	27-DEC-17
WG2690516-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Nitrate (as N)			98.3		%		70-130	27-DEC-17
P-T-COL-WT	**Water**							
Batch R3926197								
WG2692021-3 DUP		**L2039816-6**						
Phosphorus, Total		0.0418	0.0457		mg/L	9.0	20	02-JAN-18
WG2692021-2 LCS								
Phosphorus, Total			95.7		%		80-120	02-JAN-18
WG2692021-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	02-JAN-18
WG2692021-4 MS		**L2039816-6**						
Phosphorus, Total			98.8		%		70-130	02-JAN-18
Batch R3927799								
WG2692835-3 DUP		**L2038895-3**						
Phosphorus, Total		0.0478	0.0467		mg/L	2.4	20	03-JAN-18
WG2692835-2 LCS								
Phosphorus, Total			94.2		%		80-120	03-JAN-18
WG2692835-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	03-JAN-18
WG2692835-4 MS		**L2038895-3**						
Phosphorus, Total			91.6		%		70-130	03-JAN-18
Batch R3927983								
WG2692454-3 DUP		**L2038895-2**						
Phosphorus, Total		0.0233	0.0210		mg/L	10	20	02-JAN-18
WG2692454-2 LCS								
Phosphorus, Total			100.7		%		80-120	02-JAN-18
WG2692454-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	02-JAN-18
WG2692454-4 MS		**L2038895-2**						
Phosphorus, Total			98.0		%		70-130	02-JAN-18
PH-WT	**Water**							

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	**Water**							
Batch R3919528								
WG2690155-16 DUP		**WG2690155-15**						
pH		8.02	8.04	J	pH units	0.02	0.2	23-DEC-17
WG2690155-14 LCS								
pH			6.98		pH units		6.9-7.1	23-DEC-17
PHENOLS-4AAP-WT	**Water**							
Batch R3922531								
WG2691028-19 DUP		**L2038595-1**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-DEC-17
WG2691028-18 LCS								
Phenols (4AAP)			95.1		%		85-115	29-DEC-17
WG2691028-17 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	29-DEC-17
WG2691028-20 MS		**L2038595-1**						
Phenols (4AAP)			90.0		%		75-125	29-DEC-17
SO4-IC-N-WT	**Water**							
Batch R3922127								
WG2690516-10 DUP		**L2038825-3**						
Sulfate (SO4)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	27-DEC-17
WG2690516-7 LCS								
Sulfate (SO4)			99.7		%		90-110	27-DEC-17
WG2690516-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-DEC-17
WG2690516-9 MS		**L2038825-3**						
Sulfate (SO4)			98.6		%		75-125	27-DEC-17
SOLIDS-TDS-WT	**Water**							
Batch R3922073								
WG2690253-3 DUP		**L2038864-1**						
Total Dissolved Solids		195	189		mg/L	3.1	20	24-DEC-17
WG2690253-2 LCS								
Total Dissolved Solids			96.9		%		85-115	24-DEC-17
WG2690253-1 MB								
Total Dissolved Solids			<10		mg/L		10	24-DEC-17
SOLIDS-TSS-WT	**Water**							
Batch R3922134								
WG2690421-3 DUP		**L2037640-1**						
Total Suspended Solids		41.8	39.3		mg/L	6.0	20	28-DEC-17
WG2690421-2 LCS								

Quality Control Report

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-WT	**Water**							
Batch R3922134								
WG2690421-2 LCS								
Total Suspended Solids			98.7		%		85-115	28-DEC-17
WG2690421-1 MB								
Total Suspended Solids			<2.0		mg/L		2	28-DEC-17
TKN-WT	**Water**							
Batch R3925649								
WG2691803-3 DUP		**L2038864-2**						
Total Kjeldahl Nitrogen		<1.5	<1.5	RPD-NA	mg/L	N/A	20	30-DEC-17
WG2691803-2 LCS								
Total Kjeldahl Nitrogen			102.6		%		75-125	30-DEC-17
WG2691803-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	30-DEC-17
WG2691803-4 MS		**L2038864-2**						
Total Kjeldahl Nitrogen			105.0		%		70-130	30-DEC-17
VOC-ROU-HS-WT	**Water**							
Batch R3919530								
WG2690088-4 DUP		**WG2690088-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	27-DEC-17
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	27-DEC-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17

Quality Control Report

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 R3919530								
WG2690088-4 DUP		**WG2690088-3**						
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-DEC-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	27-DEC-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	27-DEC-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	27-DEC-17
WG2690088-1 LCS								
1,1,1,2-Tetrachloroethane			99.0		%		70-130	27-DEC-17
1,1,2,2-Tetrachloroethane			102.5		%		70-130	27-DEC-17
1,1,1-Trichloroethane			105.1		%		70-130	27-DEC-17
1,1,2-Trichloroethane			105.4		%		70-130	27-DEC-17
1,2-Dibromoethane			106.7		%		70-130	27-DEC-17
1,1-Dichloroethane			106.3		%		70-130	27-DEC-17
1,1-Dichloroethylene			101.0		%		70-130	27-DEC-17
1,2-Dichlorobenzene			100.7		%		70-130	27-DEC-17
1,2-Dichloroethane			115.0		%		70-130	27-DEC-17

Quality Control Report

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 R3919530								
WG2690088-1 LCS								
1,2-Dichloropropane			109.6		%		70-130	27-DEC-17
1,3-Dichlorobenzene			98.1		%		70-130	27-DEC-17
1,4-Dichlorobenzene			99.9		%		70-130	27-DEC-17
Acetone			131.5		%		60-140	27-DEC-17
Benzene			106.3		%		70-130	27-DEC-17
Bromodichloromethane			106.3		%		70-130	27-DEC-17
Bromoform			98.2		%		70-130	27-DEC-17
Bromomethane			104.1		%		60-140	27-DEC-17
Carbon tetrachloride			103.7		%		70-130	27-DEC-17
Chlorobenzene			102.5		%		70-130	27-DEC-17
Chloroethane			105.2		%		70-130	27-DEC-17
Chloroform			107.4		%		70-130	27-DEC-17
cis-1,2-Dichloroethylene			107.4		%		70-130	27-DEC-17
cis-1,3-Dichloropropene			108.5		%		70-130	27-DEC-17
Dibromochloromethane			104.8		%		70-130	27-DEC-17
Dichlorodifluoromethane			81.7		%		50-140	27-DEC-17
Dichloromethane			111.2		%		70-130	27-DEC-17
Ethylbenzene			100.4		%		70-130	27-DEC-17
m+p-Xylenes			101.4		%		70-130	27-DEC-17
Methyl Ethyl Ketone			115.4		%		60-140	27-DEC-17
Methyl Isobutyl Ketone			113.2		%		50-150	27-DEC-17
n-Hexane			87.9		%		70-130	27-DEC-17
MTBE			106.1		%		70-130	27-DEC-17
o-Xylene			100.1		%		70-130	27-DEC-17
Styrene			99.3		%		70-130	27-DEC-17
Tetrachloroethylene			98.1		%		70-130	27-DEC-17
Toluene			101.8		%		70-130	27-DEC-17
trans-1,2-Dichloroethylene			109.0		%		70-130	27-DEC-17
trans-1,3-Dichloropropene			104.9		%		70-130	27-DEC-17
Trichloroethylene			103.6		%		70-130	27-DEC-17
Trichlorofluoromethane			104.8		%		60-140	27-DEC-17
Vinyl chloride			101.7		%		60-140	27-DEC-17
WG2690088-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	27-DEC-17

Quality Control Report

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 R3919530								
WG2690088-2 MB								
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	27-DEC-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	27-DEC-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	27-DEC-17
1,2-Dibromoethane			<0.20		ug/L		0.2	27-DEC-17
1,1-Dichloroethane			<0.50		ug/L		0.5	27-DEC-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	27-DEC-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	27-DEC-17
1,2-Dichloroethane			<0.50		ug/L		0.5	27-DEC-17
1,2-Dichloropropane			<0.50		ug/L		0.5	27-DEC-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	27-DEC-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	27-DEC-17
Acetone			<20		ug/L		20	27-DEC-17
Benzene			<0.50		ug/L		0.5	27-DEC-17
Bromodichloromethane			<1.0		ug/L		1	27-DEC-17
Bromoform			<1.0		ug/L		1	27-DEC-17
Bromomethane			<0.50		ug/L		0.5	27-DEC-17
Carbon tetrachloride			<0.50		ug/L		0.5	27-DEC-17
Chlorobenzene			<0.50		ug/L		0.5	27-DEC-17
Chloroethane			<1.0		ug/L		1	27-DEC-17
Chloroform			<1.0		ug/L		1	27-DEC-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-DEC-17
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	27-DEC-17
Dibromochloromethane			<1.0		ug/L		1	27-DEC-17
Dichlorodifluoromethane			<1.0		ug/L		1	27-DEC-17
Dichloromethane			<2.0		ug/L		2	27-DEC-17
Ethylbenzene			<0.50		ug/L		0.5	27-DEC-17
m+p-Xylenes			<1.0		ug/L		1	27-DEC-17
Methyl Ethyl Ketone			<20		ug/L		20	27-DEC-17
Methyl Isobutyl Ketone			<20		ug/L		20	27-DEC-17
n-Hexane			<0.50		ug/L		0.5	27-DEC-17
MTBE			<0.50		ug/L		0.5	27-DEC-17
o-Xylene			<0.50		ug/L		0.5	27-DEC-17
Styrene			<0.50		ug/L		0.5	27-DEC-17

Quality Control Report

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 R3919530								
WG2690088-2 MB								
Tetrachloroethylene			<0.50		ug/L		0.5	27-DEC-17
Toluene			<0.50		ug/L		0.5	27-DEC-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	27-DEC-17
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	27-DEC-17
Trichloroethylene			<0.50		ug/L		0.5	27-DEC-17
Trichlorofluoromethane			<1.0		ug/L		1	27-DEC-17
Vinyl chloride			<0.50		ug/L		0.5	27-DEC-17
Surrogate: 1,4-Difluorobenzene			95.0		%		70-130	27-DEC-17
Surrogate: 4-Bromofluorobenzene			95.9		%		70-130	27-DEC-17

Quality Control Report

Workorder: L2038895 Report Date: 03-JAN-18

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

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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2038895-COFC

COC Number: 14 -

Report To	Acct#13791
Company:	GHD LIMITED
Contact:	Jennifer Balkwill
Address:	651 Colby Drive, Waterloo, Ontario N2V 1C2
Phone:	519-884-0510

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ Yes ☐ No
☐ Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2: See PO

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To

Same as Report To ☑ Yes ☐ No
Copy of Invoice with Report ☐ Yes ☐ No
Company: GHD LIMITED
Contact: Jennifer Balkwill

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax: Jennifer.Balkwill@ghd.com
Email 2:

Project Information

ALS Quote #:
Job #: 44985
PO / AFE: 73506479
LSD:

Oil and Gas Required Fields (client use)

Approver ID: | Cost Center:
GL Account: | Routing Code:
Activity Code:
Location:

ALS Lab Work Order # (lab use only): L2038895 Dec 22 08

ALS Contact: Rick H | Sampler: G. Moniz

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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-CLI-WT)	Total Metals (MET-T-MS-WT,WT-44985-Metals)	Total Mercury (HG-T-CVAA-WT)	Total Cr 6+ (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
1	EQ Pond Discharge	20-12-17	13:30	GRAB	R	R	R	R	R	R	R	R	R	R		4	7.48	12
2	West Storm Water Pond	"	"	"	R	R	R	R	R	R	R	R	R	R		4	8.03	12
3	East Storm Water Pond	"	"	"	R	R	R	R	R	R	R	R	R	R		4	7.49	12

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No
Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

Please fill in Client Supplied temperature and pH for Unionized NH3 calculation

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐
Ice packs Yes ☒ No ☐ | Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C:
FINAL COOLER TEMPERATURES °C: 8.1

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: G. Haney	Date: Dec 21/17	Time: 12:00	Received by:	Date:	Time:	Received by: 88	Date: 22 Dec 17	Time: 930

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

Appendix C
Analytical Data Verification Memo

Memorandum

November 17, 2017

Revised: February 2, 2018

To:	Diana Ball; Jim Yardley; Jennifer Balkwill	Ref. No.:	044985-20

JB

From: Stephanie Berton/kf/34

Subject: **Analytical Data Verification**
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
January to June and December 2017

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 January to June and December 2017. 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.

GHD
651 Colby Drive Waterloo Ontario N2V 1C2 Canada
T 519 884 0510 F 519 884 0525 W www.ghd.com

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 (0−10°C). Various samples arrived at the laboratory on the day of sampling and had not had time to achieve a temperature of <10°C. This is acceptable since the cooling process had been initiated.

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. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

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 cyanide did not meet the above guidance. The detected results associated with the low LCS recovery were qualified as estimated (see Table 3).

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 time 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.

Table 1

Sample Collection and Analysis Summary
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
January to June and December 2017

						Analysis/Parameters																				
Lab Report #	Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min.sec)	VOCs	SVOCs	Metals	Mercury	Hexavalent Chromium	Hardness	pH	Ammonia-N	Un-ionized ammonia-N	Anions (Br, Cl, F, NO3-N, NO2-N, SO4)	Alkalinity	Conductivity	Total Dissolved Solids	Total Suspended Solids	Cyanide, total	Total Phosphorus	Total Kjeldahl Nitrogen	Chemical Oxygen Demand	Dissolved Organic Carbon	Phenols	Microtox
L1883694	EQ POND	EQ Pond	Surface Water	01/25/2017	11:00:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1883694	EAST RETENTION POND	East Pond	Surface Water	01/25/2017	12:00:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1883694	WEST RETENTION POND	West Pond	Surface Water	01/25/2017	11:30:00	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	-
L1883923	EQ POND	EQ Pond	Surface Water	01/25/2017	11:00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
L1893052	EQ POND	EQ Pond	Surface Water	02/21/2017	10:45:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1893052	WEST RETENTION POND	West Pond	Surface Water	02/21/2017	11:00:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1893052	EAST RETENTION POND	East Pond	Surface Water	02/21/2017	11:15:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1893350	EQ POND	EQ Pond	Surface Water	02/21/2017	10:45:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
L1903262	EQ POND	EQ Pond	Surface Water	03/20/2017	11:00:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1903262	WEST RETENTION POND	West Pond	Surface Water	03/20/2017	11:15:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1903262	EAST RETENTION POND	East Pond	Surface Water	03/20/2017	11:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1903350	EQ POND	EQ Pond	Surface Water	03/20/2017	11:00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
L1922965	EQ POND DISCHARGE	EQ Pond	Surface Water	05/08/2017	12:15:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1922965	WEST STORM WATER POND	West Pond	Surface Water	05/08/2017	12:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1922965	EAST STORM WATER POND	East Pond	Surface Water	05/08/2017	12:45:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1922987	STN6	STN6	Surface Water	05/08/2017	12:00:00	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1922987	STN6A	STN6A	Surface Water	05/08/2017	11:30:00	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1923076	EQ POND DISCHARGE	EQ Pond	Surface Water	05/08/2017	12:15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X

Table 1

Sample Collection and Analysis Summary
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
January to June and December 2017

						Analysis/Parameters																				
Lab Report #	**Sample Identification**	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min.sec)**	**VOCs**	**SVOCs**	**Metals**	**Mercury**	**Hexavalent Chromium**	**Hardness**	**pH**	**Ammonia-N**	**Un-ionized ammonia-N**	**Anions (Br, Cl, F, NO3-N, NO2-N, SO4)**	**Alkalinity**	**Conductivity**	**Total Dissolved Solids**	**Total Suspended Solids**	**Cyanide, total**	**Total Phosphorus**	**Total Kjeldahl Nitrogen**	**Chemical Oxygen Demand**	**Dissolved Organic Carbon**	**Phenols**	**Microtox**
L1937837	EQ POND DISCHARGE	EQ Pond	Surface Water	06/05/2017	11:15:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1937837	WEST STORM WATER POND	West Pond	Surface Water	06/05/2017	11:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1937837	EAST STORM WATER POND	East Pond	Surface Water	06/05/2017	12:00:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L1936853	EQ POND	EQ Pond	Surface Water	06/05/2017	09:00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
L2038895	EAST STORM WATER POND	East Pond	Surface Water	12/20/2017	13:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L2038895	EQ POND DISCHARGE	EQ Pond	Surface Water	12/20/2017	13:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
L2038895	WEST STORM WATER POND	West Pond	Surface Water	12/20/2017	13:30:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-

Notes:

"-" - Not applicable
VOCs - Volatile Organic Compound
SVOCs - Semi-Volatile Organic Compound
N - Nitrogen
Br - Bromide
F - Fluoride
Cl - Chloride
NO2-N - Nitrite-Nitrogen
NO3-N - Nitrate-Nitrogen
SO4 - Sulphate

Table 2

Analytical Method and Holding Time Criteria
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
January to June and December 2017

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 NORGA	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)	7 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 Results Due to Outlying Laboratory Control Sample Results
Surface Water Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
January to June and December 2017

Lab Report #	Parameter	Analyte	LCS % Recovery	Control Limits % Recovery	Associated Sample ID	Qualified Results	Units
L1903262	Gen Chem	EQ POND	79.5	80-120	Total Cyanide	0.0020 UJ	mg/L
L1903262	Gen Chem	WEST RETENTION POND	79.5	80-120	Total Cyanide	0.0020 UJ	mg/L
L1903262	Gen Chem	EAST RETENTION POND	79.5	80-120	Total Cyanide	0.0020 UJ	mg/L

Notes:

LCS - Laboratory Control Sample
UJ - Not detected; associated reporting limit is estimated
GenChem - General Chemistry

Appendix D
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	Lambton County
Client and/or Site Owner	Clean Harbors Canada, Inc.
Monitoring Period (Year)	January 1 through December 31, 2017
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	◉ **Annual** ○ **Other**	
The site is:	◉ **Active** ○ **Inactive** ○ **Closed**	
If closed, specify C of A, control or authorizing document closure date:		
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**	
If yes, provide details:		
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)	◉ Yes ○ 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:

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:	◉ **Yes** ○ **No**	Not Applicable
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):	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
Not Applicable		

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.	◯ **Yes** ◯ **No** ◯ **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:	◯ **Yes** ◯ **No** ◯ **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**

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):	◯ **Yes** ◯ **No**	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

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.	◯ **Yes** ◯ **No**	If no, the potential design and operational concerns/ exceptions are as follows (Type Here):	
6) The site meets compliance and assessment criteria.	◯ **Yes** ◯ **No**	If no, list and explain exceptions (Type Here):	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	◯ **Yes** ◯ **No**	If no, list exceptions and explain reason for increase/change (Type Here):	
1) Is one or more of the following risk reduction practices in place at the site: ***(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** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	◯ **Yes** ◯ **No**	**Note which practice(s):**	☐ **(a)** ☐ **(b)** ☐ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◯ **Yes** ◯ **No** ◯ **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here):	

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**	
○ **The following change(s) to the monitoring program is/are recommended:**	
○ **No Changes to site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/ are recommended:**	

Name:			
Seal:	Add Image		
Signature:		**Date:**	
CEP Contact Information:			
Company:			
Address:			
Telephone No.:		Fax No. :	
E-mail Address:	Type Here		
Co-signers for additional expertise provided:			
Signature:		**Date:**	
Signature:		**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:	(●) Yes ( ) 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):	(●) Yes ( ) No ( ) **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**

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.	◯ **Yes** ◯ **No** ◉ **Not Applicable**	
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:	◯ **Yes** ◯ **No** ◉ **Not Applicable**	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**

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):	◉ **Yes** ◯ **No**	If no, specify (Type Here):

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 19.5 mg/L observed on May 6, 2017
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**	

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.	(●) **Yes** ( ) **No**	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)
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)):	( ) Yes ( ) No ( ) Not Known (●) Not Applicable	If yes, provide details and whether remedial measures are necessary (Type Here)
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	( ) **Yes** (●) **No** ( ) **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here)

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:

(●) **No Changes to the monitoring program are recommended** ( ) **The following change(s) to the monitoring program is/are recommended:**	
(●) **No changes to the site design and operation are recommended** ( ) **The following change(s) to the site design and operation is/are recommended:**	

CEP Signature	
Relevant Discipline	Professional Engineer
Date:	8-Feb-18
CEP Contact Information:	Mr. Jim Yardley, P.Eng.
Company:	GHD
Address:	455 Phillip St., Waterloo, Ontario N2L 3X2
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