

2019 Operations and Monitoring Report

Campbell River Waste Management Centre Campbell River, British Columbia

Comox Strathcona Waste Management





Executive Summary

GHD Limited (GHD) was retained by Comox-Strathcona Waste Management (CSWM), a function of the Comox Valley Regional District (CVRD), to complete the 2019 water quality monitoring and prepare this Annual Operations and Monitoring Report (Annual Report) for the Campbell River Waste Management Centre (Site or CRWMC). The objective of this Annual Report is to summarize the developmental progress and environmental monitoring for the Site during the 2019 calendar year (Reporting Period). The Annual Report contains the information required by Section 10.6 of the Landfill Criteria for Municipal Solid Waste (Landfill Criteria), Section 25.3 of the 2012 Comox-Strathcona Solid Waste Management Plan (SWMP), and Section 3.2 of the Operational Certificate (OC) MR-02401.

The Site is located on Crown Lands within the city limits of Campbell River, British Columbia (BC) at 6700 Argonaut Road approximately 7.5 kilometres (km) west of the city centre. The Site is owned by the CVRD and operated by Berry & Vale Contracting Ltd. under contract with the CVRD. The authorized works include the municipal solid waste landfill and related appurtenances.

Site Operations and Development

During the 2019 calendar year, approximately 27,318 tonnes of waste was landfilled at the Site, resulting in an updated per capita disposal rate estimate of 0.63 tonnes/year. Approximately 2,347 tonnes of waste was diverted from the landfill to the end of the Reporting Period. Approximately 91,508 m³ of airspace remains under the current design contours. At this time, the Landfill is forecasted to reach final capacity in early 2022.

The BC Ministry of Environment and Climate Change Strategy (ENV) is currently working to amend the Site's OC. The initial draft of the OC was provided to the CVRD in November 2019. At the time of preparing this Annual Report, the OC amendment process is still in progress.

Construction for final closure for landfill at the Site is scheduled to be complete by late 2023. The detailed design of final cover system including the LFG collection system is scheduled to occur in late 2020/early 2021. Construction of the final cover system, LFG collection system, and flare compound for the Site is currently scheduled to commence in concurrence with the closure of the Landfill in 2022 to 2023.

As recommended in the 2018 Annual Operations and Monitoring Report (GHD, 2019) repairs were made to the riser pipes of HBT94-1, HBT94-2, and HBT94-3, the steel casing was repaired on AG99-06, and monitoring wells EBA04-3 and EBA04-4 were decommissioned. A new monitoring well, MW04-19 was installed west of the surface water management pond in October 2019.

In 2019 the CVRD continued the staged implementation of Site improvements through the construction of surface water management works in areas of the landfill which had reached final contours. This included the following:

- Completion of the surface water management pond including inlet and outlet structures and ditching in Block J at the Site.
- Improvements to the Landfill's north perimeter surface water ditching and south surface water management piping.



Environmental Monitoring

Groundwater was observed to flow towards the east across the Site based on water levels measured during the reporting period, which is consistent with previous years. There is approximately a 35 m drop in groundwater elevations between background location MW01-16 and Site monitoring location HBT94-1. In general, groundwater elevation data collected in 2019 showed lower groundwater levels than recent monitoring years.

Downward vertical gradients were observed at nested wells EBA04-6/EBA04-7 and MW03-18/AG99-05 in 2019. Vertical gradients at EBA04-6 and EBA04-7 have historically been downward. MW03-18 was installed in summer 2018, therefore, limited groundwater elevation data for this location has been collected to date.

Analytical results for groundwater and surface water samples are compared to the BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96 including amendments up to BC Reg. 253/2016, November 1, 2017) Schedule 3.2 Column 3 (Aquatic Life - Freshwater) (FAW) and Schedule 3.2 Column 6 (Drinking Water) (DW).

Surface water analytical results are compared to the British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (BC ENV, 2018), BC Source Drinking Water Quality Guidelines (ENV, 2017), and BC Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (BC Ministry of Environment [MOE], 2017) (WQG) for drinking water (DW) and the protection of freshwater aquatic life (FWAL).

No landfill derived impacts were observed in groundwater quality at background monitoring well MW01-16. Groundwater quality at monitoring well MW01-16 is considered to be representative of background groundwater quality at the Site.

Leachate impacts continue to be observed in groundwater at monitoring wells located in the Landfill Area monitoring wells EBA04-6, HBT94-1, HBT94-2 and HBT94-3. Manganese concentrations were greater than the CSR DW standards during one or more monitoring events in 2019 at HBT94-1.

Discernible changes to the shallow downgradient groundwater quality at EBA11-1 were observed with increased manganese, iron, chloride, hardness, and alkalinity concentrations. Manganese concentrations exceeded the drinking water quality CSR standard for one monitoring event (November) in 2019. Further monitoring at this location is required to determine the potential source of this change in groundwater quality.

Shallow downgradient groundwater quality southeast of the Site at MW02-18 appears to show some level of leachate derived impacts. Leachate parameters are elevated in water collected from MW02-18 and analytical results for manganese were greater than the applicable CSR standards. However, monitoring well MW02-18 is located adjacent to a historic dumping ground, therefore, it is difficult to determine if groundwater quality is adversely affected by the dumping ground, the Site, or both.

Deep downgradient groundwater quality southeast of the Site at AG99-01, AG99-02, AG99-04, and AG99-05 remains generally stable over time with minimal leachate impacts observed. Groundwater quality results from monitoring wells southeast and downgradient of the Site (AG99-01, AG99-02, AG99-04, and AG99-05) were below the applicable CSR standards for all parameters analyzed in



2019 with the exception of vanadium concentrations detected at AG99-02 during all monitoring events. The source of vanadium in groundwater quality at AG99-02 is not known at this time.

Surface water quality monitoring results obtained in 2019 from SW-1 (tributary of Cold Creek) and SW03-17 (unnamed pond upstream of SW-1) were assessed. Based on the results from the surface water samples, the presence of leachate impacts are not suspected, based on low level of leachate indicator parameters including alkalinity, ammonia, chloride, and conductivity levels.

Recommendations

Based on the findings of the 2019 Annual Operations and Monitoring Report, the following recommendations are made:

Operations

- Continue operating the landfill implementing the 2017 DOCP fill plan.
- Proceed with preparing a Closure Plan report for the Landfill as per the Landfill Criteria. The Landfill is forecasted to reach capacity in approximately 2 years (first quarter of 2022).
- Monitoring wells MW01-16, MW04-19, AM02-19, HBT94-1, HBT94-2, HBT94-3 and AG99-06
 were surveyed/resurveyed in November 2019. Comparison of the survey results with the
 historical survey results indicate some disparities. It is recommended that the CVRD resurvey all
 existing monitoring wells to obtain accurate coordinates and elevations to assist with
 hydrogeological interpretation.
- Complete the detailed design of the landfill gas collection system in 2020/2021 in preparation for construction in 2022/2023 to comply with the requirements of the LFG Regulation.

Monitoring Program

- Monitoring well MW04-19 was installed in October 2019. It is recommended that this well be included in the 2020 monitoring program.
- Include recording the water level measurements as measured at the Ladore Dam by BC Hydro with the Site's EMP.
- Include the SWM Pond in the Site's surface water monitoring program.
- Proceed with installing the three proposed monitoring wells at the Site in accordance with schedule provided in the 2017 DOCP, either in 2020 or 2021



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1. Introduction

GHD was retained by Comox-Strathcona Waste Management (CSWM), a function of the Comox Valley Regional District (CVRD), to complete the 2019 water quality monitoring and prepare this Annual Operations and Monitoring Report (Annual Report) for the Campbell River Waste Management Centre (CRWMC or Site).

1.1 Objectives and Scope

The purpose of this Annual Report is to summarize the Site operations and development activities carried out during the reporting period and to provide and assess the Site environmental monitoring data for the 2019 calendar year (Reporting Period). The Annual Report contains the following information in accordance with Section 10.6 of the Landfill Criteria for Municipal Solid Waste (Landfill Criteria) (BC MOE, 2016), Section 25.3 of the 2012 Comox Strathcona Solid Waste Management Plan (SWMP) (AECOM, 2013), and Section 3.2 of the Site's Operational Certificate (OC) MR-02401 (attached as Appendix A):

- A review of the preceding year of operation, plans for the next year and any new information or proposed changes relating to the facility (Sections 3.2, 3.3, 3.11).
- A summary of the landfill operation equipment (Section 3.1).
- Closure works completed (Section 3.3.2).
- Summary of complaints received and the actions taken as a result of the complaint (Section 3.4).
- Identification of non-compliance items and proposed action plan and schedule to reach compliance (if applicable). (Section 3.5).
- Progress report on efforts to resolve previously identified non-compliance items (if applicable).
 (Section 3.5).
- Landfill gas quantities collected, flared, and utilized (Section 3.6).
- The tonnage of each type of waste discharged into the landfill or diverted (Section 3.7).
- An updated estimate of the municipal solid waste (MSW) per capita disposal rate (Section 3.7.1).
- A waste area population table including adjusted projected population for the estimated facility life (Section 3.7).
- A survey including volume changes, on required frequency (Section 3.8).
- The remaining site life and capacity update (Section 3.9).
- Update to the closure and post-closure liability fund estimate (Section 3.10).
- Comparison of the water quality monitoring data with the performance criteria in Section 4 of the Landfill Criteria for Municipal Solid Waste and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills, interpretation of the monitoring data, identification and



interpretation or irregularities and trends, recommendations, and any proposed changes to the monitoring program (Section 5.0).

1.2 Regulatory Settings

The landfill currently operates under OC MR-02401, issued on December 2, 2003, by the British Columbia Ministry of Environment (MOE). OC MR-02401 replaced the original permit, which was issued in November 1973 and last amended in July 1992 (CH2MHILL, 2009). A copy of OC MR-02401 is included in Appendix A. Refuse authorized for disposal at the Site is characterized as "municipal solid waste as defined under the Waste Management Act".

Groundwater quality for the Site has been historically compared to the BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96 including amendments) Schedule 10 (Schedule 10) Column V (Drinking Water) (DW) and Schedule 6 (Schedule 6) Column II (Aquatic Life, Freshwater) (FAW) and Column V (Drinking Water) (DW). On November 1, 2017, the Stage 10 (Omnibus) and Stage 11 (Housekeeping) amendments came into effect, thus replacing the CSR Standards listed above. The CSR standards applied in this Annual Report are:

- Schedule 3.2 Generic Numerical Water Standards Column 3 (Aquatic Life, Freshwater [FAW])
- Schedule 3.2 Generic Numerical Water Standards Column 6 (Drinking Water [DW])

The appropriate groundwater standards that apply to the Site depend on the current and future potential groundwater and surface water uses in the vicinity of the Site and the potential for groundwater or surface water at the Site to flow to surface water bodies that support aquatic life in the vicinity of the Site. The BC Ministry of Environment and Climate Change Strategy (ENV) (formerly the BC MOE) *Protocol 21 Water Use Determination* (Protocol 21) provides the criteria for selecting the appropriate CSR standards for water quality.

Protocol 21 specifies that Aquatic Life (AW) standards apply to groundwater quality at sites located within a 500 metre (m) radius of a surface water body. According to iMapBC, accessed February 12, 2019, the Site is located less than 500 m from two fresh surface water bodies: McIvor Lake and an ephemeral tributary of Cold Creek. McIvor Lake is upgradient of the Site and is not a receptor of any groundwater discharge from the Site. The tributary of Cold Creek is downgradient of the Site and may potentially be a receptor of groundwater discharge from the Site. Therefore, freshwater AW standards apply to groundwater at the Site.

Based on the information obtained from iMapBC, accessed March 9, 2020, three water supply wells are located within a 500 m radius from the Site listed for Private Domestic use. Additionally, based on GHD's correspondence with the owner of the adjacent property, located at 5900 Argonaut Road, there is an unregistered shallow dug well located on the 5900 Argonaut Road property, which is located less than 500 m from the Site. GHD understands the well is used for domestic purposes at this time. The DW CSR standards have been applied to the Site in accordance with Protocol 21.

Surface water analytical results are also compared to the British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (ENV, 2018), BC Source Drinking Water Quality Guidelines (ENV, 2017), and BC Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (BC MOE, 2017) (WQG) for drinking water (DW) the protection of freshwater aquatic life (FWAL).



1.3 Annual Report Organization

The Annual Report is organized into the following sections:

• Section 1. Introduction

Section 2. Site Background

• Section 3. Site Operations and Development

Section 4. Environmental Monitoring Program

Section 5. Environmental Monitoring Results

• Section 6. Summary

Section 7. Recommendations

Section 8. References

2. Site Background

2.1 Site Location

A Site location map is presented on Figure 2.1 and a Site Plan is presented on Figure 2.2. Figure 2.3 presents the land zoning uses in the area surrounding the Site.

The Site is located on Crown Lands within the city limits of Campbell River, BC at 6700 Argonaut Road, approximately 7.5 kilometres (km) west of the city centre. The legal description for the southern half of the Site is Block M, all part of District Lot 85, Sayward District. The legal description of the northern portion of the Site is Block J, all part of District Lot 85, Sayward District. The previous legal land description for Block M was "Block C, together with that part of Block A, and that part of Block K, all part of District Lot 85, Sayward District". The aforementioned lands were all combined into Block M as per Land Lease V934579 dated January 8, 2019 from the Ministry of Forests, Lands and Natural Resource Operations.

A portion of Block M and a majority of Block J are located within the ALR as set out by the ALC. The CVRD has received a variance from the ALC with regards to the current location of the sanitary landfill and stormwater management pond where they overlap with ALR lands. The ALR boundary also includes land parcels located north and east of the Site as illustrated in Figure 2.4.

The total Site area is 29.7 hectares. The Site is currently zoned as Industrial Four (I-4) under the City of Campbell River Bylaw No. 3250, 2006, consolidated to bylaw 3743, 2019 (last amended November 4, 2019).

Island Ready Mix is located immediately to the west of the Site and houses operations and equipment for concrete manufacturing and a gravel pit. West Shore Aggregates Ltd. operates a gravel pit immediately to the south of the Site. The West Shore Aggregates property also has a landfill permitted to discharge refuse from "dryland log sorting, land clearing, construction and demolition operations" under permit PR-07730.



Mature forests situated on Crown Land are located to the north and east of the Site. There are three residential dwellings located approximately 500 m to the northeast of the landfill footprint. The property immediately to the east of Block J is occupied by a single dwelling residential lot.

There are also several active and historical industrial operations in the vicinity of the Site. Active industrial operations include an auto scrap yard, three construction waste landfills (permits PR-07730, PR-10807, and PR-9081), aggregate extraction pits, an asphalt paving plant, and an Emcon facility, which includes a salt storage shed. Historical operations in the area include a crane operation, which housed facilities for cleaning copper coated fish farm nets, and a metal scrap yard.

2.2 Landfill Development

Prior to waste disposal operations at the Site, the Site operated as an aggregate extraction facility in the 1950s. According to CH2MHILL's 2009 closure plan, the Site was then used as an unregulated dump site prior to the 1970s. Waste burning took place at the Site as well as disposal of liquid wastes (EBA, 2014). The City of Campbell River took over Site operations in the mid 1970s until ownership was transferred to the CVRD in 1999 (EBA, 2014). A private contractor, Berry & Vale Contracting Ltd. (Berry & Vale), has operated the Site under contract with the CVRD since 1996.

According to the SWMP, the Site was projected to reach its capacity in early 2012. A transfer station was constructed in 2011 to divert certain incoming waste streams to the Comox Valley Waste Management Centre (CVWMC). In 2014, a mechanically stabilized earth wall (MSE wall) was constructed along the southeastern Site boundary with the aim of addressing slope re-grading concerns and adding approximately five years of Site life.

Landfilling currently occurs on Block M. Block J is primarily utilized for extraction of sand and gravel for use as cover material within the landfill. An updated 2017 Design, Operations, and Closure Plan (2017 DOCP) (GHD, 2017) was prepared in 2017 and was submitted to ENV in March 2018. The 2017 DOCP provides final contours and a closure plan for the Site. The 2017 DOCP includes updated plans for the management of landfill gas and surface water. In 2018 construction began on a stormwater management pond (SWM Pond) in Block J and was completed in 2019. Construction for the final closure works for the Landfill is scheduled for 2022 to 2023.

Figure 2.2 presents a site plan for the Site.

2.3 Topography and Drainage

Topography in the vicinity of the Site generally slopes downward to the east from McIvor Lake, (approximately 400 m to the west of the landfill footprint), flattening out approximately 500 m to the east of the Site. The Site is located on the north side of a local valley. The narrow valley floor slopes to the east/northeast following the course of Argonaut Road. The valley appears to have been expanded laterally by historical soil extraction operations at the Site and to the southwest of the Site across Argonaut Road.

There are no natural watercourses on the Site. A constructed surface water infiltration swale is located along the southeast boundary of the landfill footprint, which collects surface runoff from the southeast side of the landfill footprint. During periods of heavy rainfall, surface water has been



observed to flow northeast along the swale infiltrating into the ground within approximately 500 m of the landfill footprint.

The closest natural surface water channel is located 400 m northeast of the Site and is one of several ephemeral tributaries of Cold Creek. Cold Creek discharges into the Quinsam River approximately 3 km northeast of the Site. Quinsam Hatchery, a salmon hatchery, is located at the confluence of Cold Creek and the Quinsam River. Quinsam River ultimately drains into the Campbell River approximately 2.3 km downstream of the confluence of Cold Creek and Quinsam River.

McIvor Lake, which is contiguous with Campbell Lake, is located approximately 400 m to the west of the Site with a lake elevation of approximately 180 metres above mean sea level (m AMSL) well above the inferred original ground surface elevation of the Site (140 m AMSL). A drainage map illustrating surface water drainage in the area of the Site is presented in Figure 2.5.

2.4 Geologic Setting

2.4.1 Regional Geology

Vancouver Island is part of the Wrangellia Terrane, which includes most of Vancouver Island, Haida Gwaii, and parts of central Alaska. The Wrangellia Terrane is composed mostly of widespread, late Triassic aged flood basalts (Greene, Scoates and Weis, 2005). Regional bedrock geology in the vicinity of the Site is composed of the Vancouver Group of mid to late Triassic age (Guthrie, 2003). The Vancouver Group is composed of undivided sedimentary rocks, marine sedimentary volcanic rocks, and small amounts of siltstones.

At several time periods during the Pleistocene Epoch, Vancouver Island was believed to be glaciated with ice thicknesses up to 2,000 m. During the recession of the last glaciation approximately 14,000 years ago, glacial and glaciofluvial sediments were deposited, and in some cases reworked and redeposited, to make up many of the present surficial deposits of Vancouver Island. These deposits consist of till, which is deposited directly by glacial activity and consist of larger clasts supported in a matrix of fine grained sediment, and of glacial outwash, which consists primarily of poorly sorted, coarse grained (sand and gravel) sediments deposited by glacial melt water (Greene, Scoates and Weis, 2005). The overburden at the Site consists of glaciofluvial and outwash deposits of sand and gravel.

2.4.2 Site Geology

The understanding of the Site geology presented in the following sections is based on existing Site borehole logs for the monitoring wells, provided in Appendix C, regional mapping, previous reports, and well completion logs from nearby private wells.

2.4.2.1 Overburden Geology

Overburden geology at the Site is relatively homogeneous and is primarily composed of deposits of fine to medium grained sand interbedded with deposits of fine to medium grained sand and medium subrounded gravel. Lenses of silt and fine grained sand up to four metres in thickness are present in an irregular distribution across the Site. Decommissioned monitoring well EBA04-5 was the deepest boring within the Site boundaries with a depth of 67 metres below ground surface (m BGS). Bedrock



was not encountered at monitoring well EBA04-5. The boring locations (monitoring wells) are illustrated on Figure 2.2.

2.4.2.2 Bedrock Geology

Based on Site borehole logs and private water supply well stratigraphy logs, bedrock has not been encountered in any boreholes advanced within the Site or immediately to the north and west of the Site, which are up to 67 m deep. Bedrock is also not encountered at private water supply wells, which are approximately 60 m deep and located approximately 3 km to the northeast to the Site. Bedrock is encountered at a depth of approximately 1.8 m BGS) approximately 1.5 km to the southwest of the Site based on well stratigraphy log for private water supply well (well tag 98020) adjacent to McIvor Lake. The bedrock lithology was not indicated on the well log.

From review of bedrock geology maps of the area, it appears the Karmutsen formation is the bedrock unit in the vicinity of the Site. The Karmutsen formation is comprised of volcanic basalts and breccias.

2.5 Hydrogeologic Setting

The BC aquifer classification system lists Aquifer 975 to be evident over the extent of the Site. Aquifer 975 is classified as a sand and gravel aquifer of moderate productivity, high vulnerability, and low demand.

The Site is located on an unconfined aquifer primarily composed of sands and gravels. Groundwater within this aquifer flows to the east northeast across the Site. From the mid-1990s to the early 2000s an overall decrease in groundwater elevations within the sand and gravel aquifer by 2 to 4 m is apparent based on historical Site groundwater elevation measurements. The cause of this decrease in groundwater elevations is unknown, however, this phenomena is not suspected to be related to the Site.

The Site monitoring wells are generally screened a depths ranging from approximately 1 to 25 m below the top of the water table within the overburden aquifer. Wells screened less than 15 m below the top of the water table are considered to monitor the shallow portion of the overburden aquifer. Wells screened greater than 15 m below the top of the water table are considered to monitor the deep portion of the overburden aquifer. Further details regarding well depth classification is provided in Section 4.1.

Figure 5.2 presents groundwater contours for the November 2019 monitoring event. Based on GHD field measurements, the water table in the vicinity of the landfill is encountered at depths ranging from 20 to 38 m BGS. Seasonal water table fluctuations ranging from 1.23 m to 3.57 m were observed in 2019. The lowest groundwater elevations were measured in September during the 2019 monitoring year. In previous annual reports, groundwater contours were generated for spring and fall conditions. In those reports, it was noted there was not a significant change in the groundwater flow direction between the spring and fall monitoring events.

Further details of the results of the 2019 hydraulic monitoring program at the Site are presented in Section 5.2.



2.6 Potential Receptors

Surface water bodies located within a 500 m radius of the Site are McIvor Lake and Cold Creek. Based on the local topography and interpreted groundwater flow direction, McIvor Lake is located upgradient from the Site; therefore, it is an unlikely receptor of groundwater or surface water from the Site. The ephemeral tributary of Cold Creek is located northeast of the Site boundary (750 m northeast of the waste footprint). Based on local topography, groundwater and surface water elevations and hydrogeologic conditions (i.e., unconfined sand and gravel aquifer) of the area, the nearest tributary of Cold Creek is downgradient of the Site. There are no surface water drainages from the Site to the tributary. Groundwater discharge to this tributary is not confirmed as groundwater elevations in the vicinity of the ephemeral tributary is not known. Surface water sampling is carried out on the Cold Creek tributaries east and northeast of the Site. (SW-1 located on a tributary of Cold Creek located approximately 1,100 m east of the Site and SW03-17 located approximately 1000 m east of the Site on a pond.)

Based on a search of the iMapBC (accessed March 6, 2020), there are nine water wells within a 500 m radius of the Site. Three (3) of the water wells are listed as water supply wells for Private Domestic use, four (4) are listed as water supply wells for Commercial/Industrial use, one (1) is listed as a water supply well for unknown use and one (1) is listed as a decommissioned monitoring well (Well tag 110853 assigned as monitoring well GLL93-1) in 2013. The well licenses and a map indicating the locations of the water wells are included in Appendix D.

Well tag 84136 was included in the 2019 environmental monitoring program (EMP) under the label EBA04-1. It should be noted the BC Water Resource Atlas indicates that well tag 84136 (labeled EBA04-1) is located at the southeast side of the landfill footprint, however, it is actually located at the southwest corner of the Site.

Well tag 109728 was installed in January 2015 and appears to be located southeast of the landfill footprint on the south side of Argonaut Road.

Well tags 39950, 73577, 74191, 74207, 93413, and 103257 appear to be located hydraulically upgradient from the Site; therefore it is unlikely that MSW leachate from the Site will migrate to these well locations.

GHD understands an unregistered well is located on the 5900 Argonaut Road property approximately 70 m east of the Block J property line. GHD understands the well is a dug well currently used for domestic purposes. The well is approximately 7.9 m (26 feet) deep.

3. Site Operations and Development

3.1 Site Operations

The Site operates 7 days a week from 8:30 a.m. to 5:30 p.m., with the exception of Christmas Day and New Year's Day. The authorized works includes entrance facilities, sanitary landfill, recycling and waste drop off/storage areas, and related appurtenances.



Entrance Facilities

The Site entrance is equipped with a lockable and electrified gate system, posted signs, power, and phone connection. The Site receives waste primarily from the Campbell River wasteshed, which includes the City of Campbell River and the surrounding communities. Waste collected from transfer stations in Gold River and Cortes Island are also transferred to the Site. A weigh scale and scalehouse with a full-time attendant are located near the entrance.

Sanitary Landfill

The sanitary landfill (Landfill) is located to the northeast of the entrance facilities. It is a single-cell unlined natural attenuation landfill.

Transfer Station

The transfer station at the Site currently accepts the following types of waste:

- Household waste (non-recyclable)
- Construction and demolition materials
- Clean wood waste
- Yard waste
- Recyclable drywall

Non-recyclable household waste and construction and demolition waste received at the transfer station is discharged to the Landfill. Clean wood waste and yard waste received at the transfer station is diverted from landfill at off-site facilities.

Management of Recyclable Materials

The selected recyclables that are accepted at the Site are:

- Glass containers
- Foam containers
- Paper containers containing liquids
- Plastic film
- Other flexible plastic packaging
- Metal containers
- Hard plastic containers
- Paper and cardboard
- Household batteries (excluding vehicle batteries)
- Residential small appliance and power tools
- Larger residential product packaging (e.g. hard plastic pots and trays)
- Scrap metal



- Drywall
- Refrigerant containing items
- Commercial recyclable hard plastics
- Tires off of rims (commercial and residential)
- Light bulbs (commercial and residential)
- Yard waste and grass clippings
- Clean wood waste
- Cooking oil
- Thermostats
- Polychlorinated biphenyls (PCB) ballasts
- Smoke alarms and carbon monoxide detectors
- Commercial and residential motor oil and antifreeze
- Propane cylinders

Fencing

The entrance facilities and landfill area are surrounded by an electric fence operated year-round.

3.1.1 Operational Expenditures

The total 2019 operational expenditures for the Site is \$1,860,000. This includes the Site operator, maintenance expenditures, and Site contractors (e.g. bird control).

3.2 Changes from Approved Reports, Plans, and Specifications

3.2.1 OC Amendment

ENV is currently in the process of reviewing and updating the Site's OC in response to the CVRD's application to amend the OC. The application was made to update the list of authorized works, to incorporate Block J within the limits of the landfill site (not the area for disposal), and to recognize the 2017 DOCP.

The current OC for the Site is provided in Appendix A.

3.2.2 Site Closure

The 2017 DOCP fill plan indicated the CVRD would begin to divert walking floor trailers from the Site to the CVWMC commencing in 2018-2019. In discussion with the Site operators, GHD and the CVRD in 2019, the CVRD elected to defer the transport of walking floor trailers to the CVWMC until the last 6 months of the Landfill's life, when use of the transfer trailers becomes operationally difficult at the CRWMC. With this additional waste taken into account, the Landfill is expected to reach capacity in the first quarter of 2022. Further details regarding the estimated remaining site life are provided in Section 3.9.



3.3 Site Development

3.3.1 Closure Works Completed

No closure works were completed at the Site in 2019.

3.3.2 Surface Water Management Pond

In 2018 the CVRD undertook staged implementation of Site improvements through the construction of surface water management works in areas of the landfill which had reached final contours. The detailed designs of these works were completed by GHD. Based on the detailed designs the CVRD undertook the partial implementation of improvements including:

- Construction of a surface water infiltration pond including inlet and outlet structures and ditching.
- Improvements to the Landfill's north perimeter surface water ditching and south surface water management piping.

The project was undertaken by the CVRD with Berry & Vale conducting the construction. The first stage of works were completed in 2019 and included:

- The installation of the SWM Pond including pond inlet and outlet structures, forebay and forebay berm.
- Connection piping from south landfill ditches.
- Improvement and realignment of approximately 75 m of landfill north perimeter surface water ditching including installation of Cable Concrete® and culverts under planned road access.
- Improvement and realignment of 125 m of landfill south perimeter ditching including 6 m of Cable Concrete®.
- Construction of SWM Pond perimeter surface water ditching and the revision to exclude Cable Concrete®.

To accommodate the SWM Pond construction, monitoring well EBA04-3 was decommissioned in 2019 as it was located within the footprint of the new SWM Pond.

3.3.3 Maintenance and Repairs

Ongoing maintenance and repairs of Site equipment was completed as scheduled and required.

3.3.4 Site Buildings

A prefabricated fabric building was constructed at the diversion area of the CRWMC in July 2019. The fabric building was manufactured by Calhoun and assembled onsite by Absolutely Covered. The building consists of a lock block foundation, metal framing and a fabric cover. The building is used to store household hazardous waste.

3.3.5 Monitoring Well Repairs and Decommissioning

In October 2019, a number of repairs were undertaken to monitoring wells, in addition to installation of a new well and decommissioning of two wells. The PVC riser pipes of three monitoring wells,



HBT94-1, HBT94-2, and HBT94-3 were repaired, and monitoring well AG99-06 also had the steel protective casing repaired in to enable the well to be securely locked.

As noted in Section 3.3.2, monitoring well EBA04-3 was decommissioned as it was located within the footprint of the new SWM Pond, and was inaccessible for monitoring since mid-2018. Monitoring well EBA04-4 was also decommissioned in October 2019 as it has been previously damaged, and approximately 2 m of waste are planned to be landfilled in the vicinity of this well over the next 2 years.

Monitoring wells MW01-16, MW04-19, AM02-19, HBT94-1, HBT94-2, HBT94-3, and AG99-06 were surveyed/resurveyed in November 2019. Comparison of the survey results with the historical survey results indicates a different benchmark may have been used to survey the monitoring wells prior to GHD commencing the monitoring program at the Site as the X and Y coordinates significantly vary. It is recommended that the CVRD resurvey all existing monitoring wells to obtain accurate X and Y coordinates and elevations to assist with hydrogeological interpretation.

3.3.6 Composting Facility

In 2019, the CVRD received Board approval for a food and yard waste composting facility on Block J of the Site. The design of the compost facility is scheduled to be completed in 2020 and construction will commence in 2021.

3.3.7 Inspections

During repair of the monitoring wells HBT94-1, HBT94-2, and HBT94-3 final cover material in the immediate vicinity of the wells was removed. Final cover is scheduled to be replaced in spring of 2020.

Otherwise, inspections undertaken on Site for cover integrity, health of vegetation, burrowing animals, erosion and settlement were reported as good by the CVRD throughout 2019.

3.4 Complaints

The CVRD reported that there were no complaints received throughout 2019 for the Site.

3.5 Emergencies or Non-Compliance Items

The CVRD advised that no emergencies occurred at the Site in 2019.

The CVRD received notice from ENV by means of a warning letter dated March 21, 2019, identifying non-compliance items with regards to the LFG Regulation. The primary non-compliance item identified in the inspection letter is the Site did not have an LFG collection system prior to the construction deadline (2017). The CVRD's initial response to the inspection letter including the proposed action plan is documented in the letter dated April 18, 2019, included in Appendix B.

At the time of receiving the notice letter, the CVRD was in the process of preparing an application for a substituted requirement in accordance with Section 19 of the LFG Regulation. The substituted requirement application then became a part of the CVRD's action plan to address the March 21, 2019 letter. The CVRD submitted an application for a substituted requirement under the LFG Regulation on March 19, 2019. The application for the substituted requirement was based on the



rationale that the updated design for the LFG collection system was planned to be installed concurrent with Site closure in 2022-2023 as outlined in the 2017 DOCP. The key design consideration of the updated LFG collection system design was the concurrent installation of the final cover system over the Landfill to allow for more efficient LFG collection. The CVRD's application for a substituted requirement under the LFG Regulation was refused by ENV.

The CVRD's current action plan and timeline to construct a LFG collection system at the Site is as follows:

- Late 2020 Tender and contract award for detailed design for landfill closure (including LFG collection system detailed design)
- 2021 Detailed design for landfill closure and LFG collection system
- 2022 Begin construction of final cover system and LFG collection system
- 2023 Complete closure construction

3.6 Landfill Gas Collection

As part of the 2017 Design, Operations, and Closure Plan (GHD, 2018) [2017 DOCP], GHD updated the most recent Landfill Gas Generation Assessment (Conestoga-Rovers and Associates, 2010) to assist the development of the conceptual design of the landfill gas (LFG) collection system for the Site. The updated LFG generation assessment (GHD 2017) predicted that the Site will produce approximately 1,524 tonnes of methane in 2019 (GHD, 2017). The detailed design of the LFG collection system is scheduled to occur in late 2020 to 2021. Construction of the LFG collection system and flare compound for the Site is currently scheduled to commence in concurrence with the closure of the Landfill in 2022 to 2023.

3.7 Waste Tonnage

Table 3.1 presents tonnages of each type of waste received and discharged to the Landfill in 2019. Approximately 31,556 tonnes was received at the Site. Approximately 2,347 tonnes of waste was diverted from the Landfill resulting in a total of 27,318 tonnes of waste landfilled at the Site in 2019.

3.7.1 Estimate of MSW Disposal Per Capita

Table 3.2 presents the current and projected population of the Campbell River wasteshed until the estimated date of Site closure. Based on a landfilled waste total of 27,318 tonnes and a population of 43,641 in the Campbell River wasteshed in 2019, the updated 2019 municipal solid waste per capita estimate is 0.63 tonnes.

3.8 Volume Survey

The annual airspace consumption estimate for 2019 was completed in two calculations. The first calculation used topographic survey data from October 24, 2018 and November 5, 2019. From these two surveys approximately 38,282 m³ of airspace was consumed between the two surveys. Based on this survey data, the annual airspace consumption rate is 37,560 m³ per year.



The second calculation used topographic survey data from October 20, 2016 and November 5, 2019. From these two surveys, approximately 125,479 m³ of airspace was consumed between the two survey events. Based on this survey data, the average annual airspace consumption rate is 40,695 m³ per year.

3.9 Remaining Capacity and Estimated Site Life

Based on the November 5, 2019, topographic survey, the remaining airspace between the survey and final design waste contours is approximately 122,950 m³. The corresponding final cover over the Landfill area will consume approximately 25,000 m³, leaving approximately 97,900 m³ of airspace for the discharge of waste at the time of the survey. The total remaining airspace is prorated to a remaining airspace volume of 91,508 m³ as of December 31, 2019.

As indicated in Section 3.2.2, to prolong the site life of Cell 1 at the CVWMC the CVRD has opted to defer transporting walking floor trailers from the Site until the last 6 months of the Landfill's site life. This results in a 30 percent waste diversion from the Site to CVWMC in the last 6 months of operating the Landfill.

As indicated in Section 3.8, the average annual airspace consumption rate is 40,695 m³/year. Based on the remaining airspace, airspace consumption rate, and planned partial waste diversion to the CVWMC starting in mid-2021, approximately 2.5 years of site life remains (November 2019 to March 2022). Using these inputs, the Landfill is forecasted to reach its capacity by the spring of 2022. As required by the Landfill Criteria, a Closure Plan must be submitted to ENV two years prior to closure of the landfill.

3.10 Closure and Post-Closure Fund Estimate

Forecasted closure and post-closure costs for the Site were prepared for the CVRD under separate cover. The memorandum prepared for the CVRD detailing the forecasted closure and post-closure costs also includes the Comox Valley Waste Management Centre, Gold River Landfill, Tahsis Landfill, and Zeballos Landfill. A copy of the memorandum including the information pertinent to the Site is included in Appendix E.

3.11 Monitoring Well Network Expansion

An additional groundwater monitoring well (MW04-19) was installed in October 2019 to a depth of 35.36 m. The monitoring well completion details and borehole log are provided in Appendix C. The new well is located immediately west of the SWM Pond. Based on the November 2019 monitoring event, MW04-19's screen is approximately 12 m below the water table, which is interpreted as being within the shallow portion of the overburden aquifer, but is approaching the deep portion of the overburden aquifer (15 m below the top of the water table). Further details regarding shallow versus deep monitoring wells at the Site is provided in Section 4.1. The location of MW04-19 is indicated on Figure 2.2.

3.12 Operational Plan for the Next 12 Months

Operational plans for 2020 includes the following activities:

Continue landfilling as outlined in the 2017 DOCP.



- Prepare a Closure Plan and Upgrading Plan for the Landfill in 2020.
- Detailed design for the closure of the Landfill is scheduled to commence in late 2020.
- Detailed design for the Block J compost facility is scheduled to commence in 2020.
- Relocation of some landfilled waste located near the transfer station in order to make this space available for future works.
- Connection of surface water ditching and the installation of surface water manholes along the western slope of the Landfill.
- Stockpiling and extraction of sands and gravels to be used as final cover materials will be carried out in 2020. The sands and gravels will be sourced from the land grading in Block J as part of the construction works for the organics composting facility.
- As per the 2017 DOCP, there are three monitoring wells proposed to be installed at the Site in 2020 or 2021. The three remaining monitoring wells proposed in the 2017 DOCP will be installed in 2020 or 2021. The locations for the additional monitoring wells are illustrated on Figure 3.1.

4. Environmental Monitoring Program

The water quality monitoring program for the Site was developed based on previous water quality monitoring reports and the requirements for monitoring municipal landfills as provided in Guidelines for Environmental Monitoring and Municipal Solid Waste Landfills (BC MOE, 1996). The objective of the program is to identify potential impacts (if any) the Landfill has on the receiving groundwater and surface water.

Four water quality monitoring events were conducted during the reporting period: April/May, June, September, and November.

During the reporting period, water quality monitoring was conducted by GHD personnel with analytical services provided by Canadian Association for Laboratory Accreditation (CALA) accredited laboratory ALS Canada Ltd, located in Burnaby, BC. Water quality monitoring locations are presented on Figure 2.2. Monitoring specifications including analytical parameters and monitoring frequency for 2019 are included in Appendix F.

4.1 Groundwater Monitoring Program

The objective of the groundwater monitoring program is to monitor groundwater quality within the Site area and to identify, if any, the extent, magnitude and temporal trends of landfill derived impacts to groundwater quality.

The field component of the groundwater monitoring program consists of both hydraulic monitoring and groundwater sampling at 21 locations in the Site area. Groundwater monitoring wells (MWs) are located as shown in Figure 2.2. The 2019 groundwater monitoring program included sampling individual monitoring wells as follows:

Background wells: AM02-01, MW01-16



- Landfill Wells, located within the landfill footprint or on or near the Site boundary adjacent to the landfill footprint. For discussion purposes in this Annual Report, the Landfill Wells are further divided between their screened locations in the shallow (<15 metres below the water table) or deep portions (>15 metres below the water table) of the overburden aquifer:
 - Shallow: EBA04-7, HBT94-1, HBT94-3
 - Deep: EBA04-1, EBA04-4, EBA04-6, HBT94-2
- Downgradient Wells located east of the Landfill. The Downgradient Wells are further divided between the areas northeast of the landfill footprint or southeast of the landfill footprint as well as their screen locations in the shallow or deep portions of the overburden aquifer:
 - Northeast downgradient shallow: AG99-06, EBA11-1, EBA11-2, EBA11-3, EBA11-4,
 GLL93-4 and MW04-19
 - Northeast downgradient deep: EBA04-3
 - Southeast downgradient shallow: HBT94-5, MW02-18, MW03-18
 - Southeast downgradient deep: AG99-01, AG99-02, AG99-04, AG99-05

EBA04-1 is sampled from a tap near the Site scale house upgradient of the estimated limit of waste but has been included with landfill wells for assessment due to its close proximity to the estimated limit of waste.

Groundwater samples are collected quarterly as outlined in Table 4.1 and analyzed for various general chemistry parameters, nutrients, dissolved metals, and volatile organic compounds (VOCs) at select locations, with the following exceptions:

- GLL93-4 and HBT94-5 were dry for all 2019 monitoring events. These monitoring wells have been historically dry.
- AM02-01 was dry during all 2019 monitoring events. AM02-01 has historically been periodically dry.
- EBA04-4 was found to be damaged in 2018, preventing it from being sampled in April/May, June, and September 2019. EBA04-4 was decommissioned in October 2019.
- EBA04-3 became inaccessible due to construction of the surface water management pond, preventing it from being sampled in 2019. As a result, it was decommissioned in October 2019.

Well completion details including screened intervals for each groundwater monitoring well are included in Table 4.2.

4.2 Surface Water Monitoring Program

The objective of the surface water monitoring program is to identify the extent, magnitude (if any) and temporal trends of potential landfill derived impacts to surface water quality.



Surface water monitoring locations are located downstream from the Site as shown on Figure 2.2. The 2019 surface water monitoring program included sampling of two surface water monitoring locations as follows:

- SW-1 is located on an ephemeral tributary of Cold Creek, which drains into the Quinsam River. SW-1 was sampled during the April/May, September, and November monitoring events.
 - SW-1 was not sampled in June 2019 as it was dry.
- SW03-17 is located approximately 1 km east of the Site on a pond, which at times drains into to the same ephemeral tributary of Cold Creek that SW-1 is located on. SW03-17 was sampled during the April/May, June, September, and November sampling events.

4.3 Leachate Monitoring Program

As there is no leachate collection system at the Site, no leachate monitoring program is currently in place. The Site was originally developed as a natural attenuation landfill.

4.4 Sampling Methodology

Groundwater sampling was conducted in general accordance with BC Field Sampling Manual (MOE, 2013) and consisted of the following methodology:

- Well identification and inspection.
- Water level monitoring followed by well volume calculation.
- Well purging and stabilization monitoring. Purging was completed using a dedicated bailer or dedicated WaterraTM tubing. A minimum three well volumes were purged at wells with good recovery. Wells with insufficient yield were purged dry and allowed to recover followed by sample collection. Field measurements included pH, conductivity, temperature, turbidity, and oxidation-reduction potential.
- Sample collection using dedicated sampling equipment (bailer or Waterra™).
- Equipment decontamination.

Surface water samples were collected by directly dipping a pre-cleaned unpreserved sample container below the water surface and then transferring to the appropriate preserved container when necessary. Field measurements included pH, conductivity, temperature, turbidity, oxidation-reduction potential, and dissolved oxygen.

Sampling of the domestic well on Site was completed by purging for a period of 20 minutes from an outside tap followed by direct sample collection. Field measurements collected included pH, conductivity, temperature, turbidity, and oxidation-reduction potential.

All samples were collected in the appropriate laboratory-supplied sample containers, preserved as required, packaged in an ice-chilled cooler, and delivered to the laboratory under chain-of-custody protocol. Groundwater samples designated for dissolved metals analysis were field filtered when possible.



4.5 Quality Assurance/Quality Control

In order to ensure adequate quality control for water quality samples, the following quality assurance/quality control (QA/QC) practices were employed during the reporting period:

- Activities performed by qualified and trained personnel.
- Daily field equipment calibration.
- Field QA/QC practices included field duplicate, field blank, and trip blank analysis.
- Data validation was completed by a qualified GHD chemist to assess laboratory and field QA/QC practices and to determine if the data exhibited acceptable levels of accuracy and precision.

Environmental Monitoring Results

This section presents hydraulic monitoring results, water quality monitoring results, and a review of the QA/QC practices conducted to ensure available field and analytical data are suitable for their intended use. Field data collected during the reporting period is included in Appendix G. Field sample keys and laboratory reports are also provided in Appendix G.

5.1 Data Quality Assessment and Validation

Analytical data generated during the reporting period was reviewed by a qualified GHD chemist to assess laboratory and field QA/QC.

Laboratory QA/QC practices were evaluated by analyzing laboratory holding time periods, method blank samples, control samples, replicate sample and calibration check samples in general accordance with USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R-99/008, October 1999) and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA-540/R-04-004, October, 2004).

Field QA/QC practices were monitored by analyzing field blank, trip blank, and duplicate samples. The maximum criterion used to assess overall precision for field duplicates is a relative percent difference (RPD) of 30 percent.

Qualifications were made to the analytical data presented in the following sections based on the quality assessment and validation results. Overall the data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use with noted qualifiers presented in Appendix H.

5.2 Hydraulic Monitoring Results

Hydraulic monitoring data was collected on a quarterly basis in 2019. Results are tabulated and presented in Table 4.2. Groundwater elevation data collected between 2009 and 2019 is presented as a hydrograph on Figures 5.1a, 5.1b, 5.1c, and 5.1d.

Groundwater elevation data collected in 2019 was compared with historical Site data. Groundwater was encountered at elevations ranging from approximately 151 m AMSL at the upgradient wells to



109 m AMSL in the downgradient wells in the Site area. The mean groundwater elevation for the Site is approximately 114 m AMSL. The highest groundwater elevations are found in background well MW01-16, located approximately 400 m to the west of the Site property boundary. There is approximately a 35 m drop in groundwater elevations between background location MW01-16 and Site monitoring location HBT94-1. There is also approximately a 26 m difference between water elevations at McIvor Lake (177 m AMSL) and AM02-01 (151 m AMSL). In general, groundwater elevation data collected in 2019 showed lower groundwater levels than recent monitoring years.

Groundwater contours were generated for the Site using groundwater elevation data collected in November and are presented on Figure 5.2. From examination of Figure 5.2, groundwater is inferred to flow towards the east. The inferred groundwater flow direction was also confirmed for the May 2019 monitoring event and is consistent with the November representation in Figure 5.2. The inferred flow direction is also consistent with historical data.

To determine groundwater flow in the vertical direction, the water levels measured in nested monitoring wells (situated together with varying screen depths) were compared to each other. Upward gradients represent groundwater flow from deeper elevations to shallower elevations while downwards gradients represent flow from shallower elevations to deeper elevations.

Groundwater elevation data from nested wells EBA04-6/EBA04-7 show a downward gradient during each 2019 monitoring event ranging from 0.017 to 0.020 (over a screen separation of 7.6 m). A slight downward gradient has historically been observed at these monitoring locations.

Groundwater elevation data from nested wells MW03-18/AG99-05 show a slight downward gradient during the 2019 monitoring events ranging from 0.003 to 0.004 (over a screen separation of 18.3 m).

5.3 Groundwater Quality Monitoring Results

Groundwater analytical data collected in 2019 was compared to the BC CSR water quality standards Schedule 3.2 and is presented in Tables 5.10 and 5.11. Table notes for Tables 5.10 and 5.11 are provided in Table 5.13.

The following sections present an assessment of groundwater quality during the reporting period and provides a summary of where groundwater parameter concentrations were detected above the applicable BC CSR standards. MSW leachate derived impacts to groundwater are identified based on the concentrations of typical MSW leachate parameters compared with Site background groundwater quality data.

To assist in the assessment of potential MSW leachate derived impacts, groundwater chemistry results have been separated into groundwater zones. The shallow wells are wells that are screened in the shallow portion (top 15 m) of the overburden aquifer and the deep wells are wells that are screened in the deep portion (greater than 15 m below the top of the water table) of the overburden aquifer.

- 5.3.2 Background Overburden Aquifer Quality: AM02-01, MW01-16
- 5.3.3 Landfill Overburden Aquifer Quality:
 - Shallow wells: HBT94-1, HBT94-3, EBA04-7
 - Deep wells: EBA04-1, HBT94-2, EBA04-6



5.3.4 Downgradient Overburden Aquifer Quality:

 Northeast shallow wells: EBA11-1, EBA11-2, AG99-06, EBA11-4, EBA11-3, GLL93-4, and MW04-19

Southeast shallow wells: HBT94-5, MW02-18, MW03-18

Southeast deep wells: AG99-02, AG99-01, AG99-04, and AG99-05

5.3.1 MSW Leachate Indicators

Selected parameters (typical MSW leachate parameters) were examined in groundwater quality to assess the presence of leachate in groundwater at or near the Site. Due to the lack of site-specific leachate chemistry data, typical leachate indicator parameters and their respective range of concentrations as determined by monitoring data with similar landfills (CRA, 2014), and literature values (Dydo et. al., 2005 and US EPA, 1986), were used to represent MSW leachate. Typical leachate parameters and their associated concentration ranges are presented in Table 5.1 below.

Table 5.1 Typical MSW Leachate Parameter Concentration Ranges

Parameter	Concentration
Alkalinity (mg/L) ⁽¹⁾	71 – 3,340
Ammonia (mg/L) ⁽¹⁾	84.3 – 449
Boron (ug/L) ⁽¹⁾	3,200 - 4,680
Chloride (mg/L) ⁽¹⁾	150 – 506
Conductivity (uS/cm) ⁽¹⁾	161 – 8,126
Iron (ug/L) ⁽¹⁾	940 - 40,440
Hardness (mg/L) ⁽²⁾	0.1 - 36,000
Manganese (ug/L) ⁽¹⁾	1,250 – 7,250
pH ⁽²⁾	3.5 - 8.5
Sulphate (mg/L) ⁽²⁾	25 – 500
Notes: (1) CRA, 2014 (2) Dydo et. al., 2005 and US EPA,	1986

5.3.2 Background Groundwater Quality

Groundwater monitoring locations AM02-01 and MW01-16 are used to characterize background groundwater quality conditions at the Site. AM02-01 and MW01-16 are selected as background locations based on their upgradient position relative to the Landfill and historical groundwater chemistry results. It is noted that monitoring well AM02-01 was dry during all 2019 monitoring events. The following table presents ranges of leachate indicator parameter concentrations observed in 2019 at MW01-16. Indicator parameters' concentration ranges in typical MSW leachate are also included in Table 5.2 to illustrate the relative difference between Site background groundwater and leachate chemistry.



Table 5.2 Leachate Indicator Parameter Concentrations at Background Locations

Parameter	Alk. (mg/L)	NH ₄ (mg/L)	Bo (µg/L)	CI (mg/L)	Cond. (µS/cm)	Hardne ss (mg/L)	Fe (µg/L)	Mn (µg/L)	рН	SO ₄ (mg/L)
Typical MSW Leachate	71 – 3,340	84.3 – 449	3,200 - 4,680	150 – 506	161 – 8,126	0.1 – 36,000	940 – 40,440	1,250 – 7,250	3.5 – 8.5	25 – 500
Background MW01-16	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 – 0.14	6.76 – 6.90	2.26 – 2.46

ND – Parameter concentration below laboratory detection limit.
mg/L - milligrams per litre; μg/L - micrograms per litre; μS/cm - microSiemens per centimeter.
Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl⁻: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Conductivity.
Conductivity – measured in the lab; pH – measured in the field.

Detailed Background Area groundwater analytical results are presented in Tables 5.10 and 5.11. Historical Background Area groundwater chemistry trend plots of selected leachate indicator parameters are presented in Appendix I (Figures I-1 and I-2). Historical data from private residential water well EBA06-1 has also been included in Figures I-1 and I-2; however, it is no longer included in the Site's monitoring program.

From review of historical data presented in Figures I-1 and I-2 and 2019 data presented in the above table, GHD observes the following:

- Groundwater quality at MW01-16 is generally characterized by stable concentrations of MSW leachate indicator parameters and are significantly lower than typical MSW leachate indicator parameter concentrations.
- AM02-01 continued to be dry in 2019 preventing collection of groundwater samples for field monitoring and laboratory analysis.
- VOC analytical results from MW01-16 were less than the laboratory detection limits in 2019.

From review of groundwater elevations at MW01-16, it appears groundwater elevations were less than the historical range in this area and were approximately 1.3 to 3.1 m lower than 2018 levels. Monitoring wells AM02-01 and MW01-16 are approximately 200 m east of the shore of McIvor Lake, which is contiguous with Campbell Lake. Campbell Lake is dammed by the Ladore Dam, which controls the water level in Campbell Lake and McIvor Lake. As a result, groundwater elevations at AM02-01 and MW01-16 may be affected by water level adjustments at the Ladore Dam. BC Hydro records water level elevations at the Ladore Dam; future monitoring events should include the review of water level elevations at the Ladore Dam to confirm whether there is a correlation.

Analytical results for groundwater samples collected from MW01-16 were less than the applicable CSR standards for all parameters tested in 2019.

At this time, groundwater quality at MW01-16 is considered to be representative of background groundwater quality for the Site.



5.3.3 Landfill Groundwater Quality

5.3.3.1 Landfill Shallow Groundwater Quality

Groundwater quality in the shallow portion of the overburden aquifer in the immediate vicinity of the landfill footprint (Landfill Area) is monitored by the following wells:

- Nested wells HBT94-1 and HBT94-3 located at the toe of the landfill directly to the southeast of
 the landfill footprint. These wells monitor groundwater in the shallow portion of the overburden
 aquifer. HBT94-2 is nested with the HBT94-1 and HBT94-3 and monitors the deep portion of the
 overburden aquifer. HBT94-3 was dry or had an insufficient sample volume during all 2019
 monitoring events.
- EBA04-7 located immediately to northeast of the landfill footprint. EBA04-7 is nested with deep well EBA04-6.

The following Table 5.3 presents ranges of leachate indicator parameter concentrations observed in 2019 at Landfill Area shallow wells. Typical MSW leachate concentration ranges are provided on Table 5.3 to illustrate the observed reductions in leachate parameter concentrations due to attenuation occurring through the unsaturated zone and mixing within the groundwater beneath the landfill footprint. Background concentrations are also provided to illustrate leachate parameter concentrations in groundwater above background levels. The table is arranged from highest concentrations to lowest.

Table 5.3 Leachate Indicator Parameter Concentrations at Shallow Landfill Area Wells

Parameter	Alk. (mg/L)	NH ₄ (mg/L)	Bo (µg/L)	CI ⁻ (mg/L)	Cond. (µS/cm)	Hardness (mg/L)	Fe (µg/L)	Mn (µg/L)	pH (S.U)	SO ₄ (mg/L)
Typical MSW Leachate	71 – 3,340	84.3 – 449	3,200 - 4,680	150 – 506	161 – 8,126	0.1 – 36,000	940 – 40,440	1,250 – 7,250	3.5 – 8.5	25 - 500
HBT94-1	212 – 312	3.66 – 9.24	115 – 216	16.5 – 27.1	440 – 600	177 – 246	262 – 4890	1310 – 3810	6.88 – 7.29	0.83 – 4.61
EBA04-7	383 – 440	ND 0.0025	183 – 276	33.6 – 53.6	818 – 843	385 – 429	ND 5 – 13	116 – 160	6.60 – 7.19	12.6 – 15.3
Background (MW01-16)	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 - 0.14	6.76 – 6.90	2.26 – 2.46

ND - Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; $\mu g/L$ - micrograms per litre; $\mu S/cm$ - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl⁻: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Cond.: Conductivity.

Conductivity – measured in the lab; pH – measured in the field. (1) – HBT94-3 was dry during the 2019 monitoring events.

Red – Concentration greater than applicable CSR standard

Landfill Area shallow groundwater analytical results are presented in Table 5.10 and 5.11. Historical Landfill Area groundwater chemistry trend plots of select leachate indicator parameters are presented in Appendix I (Figures I-3, I-4, I-5, and I-6).



Based on historical data presented in Figures I-3, I-4, I-5, and I-6 and 2019 water quality data presented in the above table, GHD observed the following:

- Groundwater quality at nested well HBT94-1 continues to show the presence of leachate due to elevated levels of ammonia, chloride, conductivity, iron, manganese, and alkalinity as compared to background groundwater conditions.
- In 2015, iron and cadmium concentrations at HBT94-1 were notably higher than historical ranges during one or more monitoring events. In 2016, iron and cadmium concentrations at HBT94-1 returned back to historical ranges. In 2017 and 2018, iron concentrations in groundwater at HBT94-1 increased by an order of magnitude, however other leachate indicator concentrations were similar to historical ranges. During the 2019 monitoring events, iron concentrations returned to within historical ranges and other leachate indicators remained similar to historical values. However, the cadmium concentration was an order of magnitude greater during the November 2019 monitoring event compared to the other 2019 results, but remained less than the applicable CSR standard.
- Prior to 2014, ammonia concentrations in groundwater at HBT94-1 have consistently been
 greater than background levels but were less than the applicable standards and, generally,
 stable. In 2014, a generally increasing trend in ammonia concentrations was observed in
 groundwater at HBT94-1, however, ammonia concentrations have been stable since 2015. This
 trend continues to be observed in 2019.
- Chloride concentrations in groundwater collected from EBA04-7 began to increase in September 2017 and continued through 2018. In 2019, chloride concentrations at EBA04-7 began to decrease and were similar to historical ranges during the November 2019 monitoring event. Manganese concentrations in groundwater quality at EBA04-7 were also elevated above historical ranges in 2019, continuing an apparent increasing trend that was first observed in 2018. Other leachate indicator parameter (e.g. hardness, alkalinity) concentrations in groundwater at EBA04-7 are similar to historical results. Further monitoring is required to determine if manganese concentrations continue to increase.
- VOC concentrations were less than the laboratory detection limits in groundwater quality at the shallow Landfill Area wells in 2019.

Parameter concentrations were less than applicable CSR standards in groundwater in the shallow portion of the overburden aquifer Landfill Area wells for all parameters tested in 2019 except the following:

Manganese

Manganese concentrations were greater than the CSR DW standard in groundwater samples collected from HBT94-1 for the May, June, and September monitoring events in 2019.

Manganese concentrations in groundwater quality at HBT94-1 have historically been greater than background concentrations and the applicable CSR standards. Manganese concentrations observed at HBT94-1 in 2019 were generally within historical ranges.



5.3.3.2 Landfill Area Deep Groundwater Quality

Groundwater quality in the deep portion of the overburden aquifer within the immediate vicinity of the landfill footprint (Landfill Area) is monitored by the following wells:

- EBA04-1 located at the southwest corner of the landfill footprint. EBA04-1 is a water supply well used by Site staff for non-potable uses.
- HBT94-2 located at the toe of the landfill footprint directly to the southeast of the landfill footprint. HBT94-2 is nested with shallow wells HBT94-1 and HBT94-3.
- EBA04-6 located approximately 60 m northeast of the landfill footprint. EBA04-6 is nested with shallow well EBA04-7.

The following table presents concentration ranges of leachate indicator parameters observed in 2019 at Landfill Area deep wells. Typical MSW leachate concentrations are provided on Table 5.4 to illustrate the observed reductions in leachate parameter concentrations due to attenuation through the unsaturated zone and mixing within the groundwater beneath the landfill footprint. Background concentrations are provided to illustrate leachate parameter concentrations in groundwater above background levels. Table 5.4 is arranged from highest to lowest concentrations.

Table 5.4 Leachate Indicator Parameter Concentrations at Deep Landfill Area Wells

Parameter	Alk. (mg/L)	NH ₄ (mg/L)	Bo (µg/L)	Cl ⁻ (mg/L)	Cond. (µS/cm)	Hardness (mg/L)	Fe (µg/L)	Mn (μg/L)	pH (S.U)	SO₄ (mg/L)
Typical MSW Leachate	71 – 3,340	84.3 – 449	3,200 - 4,680	150 - 5 06	161 – 8,126	0.1 – 36,000	940 – 40,44 0	1,250 – 7,250	3.5 – 8.5	25 – 500
HBT94-2	111 – 276	1.94 – 2.61	62 - 1 31	5.69 – 26.5	226 – 540	91.0 – 262	231 – 397	514 – 1280	7.53 – 7.72	2.77 – 3.18
EBA04-6	283 – 342	ND 0.0025	ND 5	3.65 – 6.97	506 – 639	278 – 348	18 – 49	0.8 – 1.02	6.91 – 7.37	2.3 – 21.4
EBA04-1	40.2 – 43.4	ND 0.0025	30 – 74	0.73 – 0.83	82.9 – 90.7	38.4 – 40.7	ND 5	ND 0.05 – 0.35	6.29 – 8.63	2.26 – 2.55
Background (MW01-16)	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 – 0.14	6.76 – 6.90	2.26 – 2.46

ND – Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; μg/L - micrograms per litre; μS/cm - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl⁻: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Cond.: Conductivity.

Conductivity – measured in the lab; pH – measured in the field.

Deep Landfill Area groundwater well analytical results are presented in Tables 5.10 and 5.11. Historical Landfill Area groundwater chemistry trend plots of select leachate indicator parameters are presented in Appendix I (Figures I-3, I-4, I-5, and I-6).



Based on historical data presented in Figures I-3, I-4, I-5, and I-6 and the 2019 data presented in the above table GHD observed the following:

- Groundwater quality at HBT94-2 continues to show the presence of leachate in groundwater as
 indicated by elevated alkalinity, boron, chloride, hardness, iron, and manganese concentrations
 compared to background groundwater conditions.
- In 2017, manganese concentrations detected in groundwater quality at HBT94-2 were greater than 1,500 μg/L (CSR DW standard), but were less than 1,500 μg/L in 2018 and 2019. This may indicate groundwater quality at HBT94-2 is improving, although further monitoring is required to confirm this interpretation.
- The leachate indicator parameter concentrations are generally one to two orders of magnitude less than typical MSW leachate concentrations indicating significant attenuation is occurring within both the unsaturated and saturated zones directly beneath the landfill footprint.
- Groundwater quality at EBA04-6 continues to show low level leachate impacts based on slightly
 elevated levels of chloride, hardness, alkalinity, and conductivity when compared to background
 groundwater conditions. MSW leachate impacts at EBA04-6 continue to be lower than leachate
 impacts observed at HBT94-2. Analytical results at EBA04-6 in 2019 were generally consistent
 with historical results.
- Groundwater chemistry at EBA04-6 indicates lower leachate parameter concentrations
 compared to shallow nested well EBA04-7. This indicates additional leachate attenuation is
 occurring between the shallow and deeper portions of the overburden aquifer. This observation
 is consistent with historical results. Unlike groundwater quality at shallow well EBA04-7, chloride,
 and manganese concentrations in groundwater at EBA04-6 were similar to historical results.
- EBA04-1 continues to show little to no landfill derived impacts based on leachate indicator
 concentrations similar to background groundwater conditions. Analytical results for groundwater
 quality at EBA04-1 in 2019 were similar to historical results. EBA04-1 is a water supply well
 used by the landfill workers for non-potable purposes.
- VOC concentrations were below laboratory detection limits at all landfill in groundwater at the sampled deep overburden Landfill Area wells in 2019.

Parameter concentrations were less than applicable CSR standards in groundwater in the deep portion of the overburden aquifer Landfill Area wells for all parameters tested in 2019.

5.3.4 Downgradient Groundwater Quality

Groundwater quality in the area downgradient of the landfill footprint is monitored at 13 monitoring wells. To facilitate the discussion of groundwater quality downgradient of the Site in this Annual Report, the discussion is further split between monitoring wells located to the northeast or southeast of the landfill footprint as listed in Section 5.3.

5.3.4.1 Northeast Downgradient Shallow Groundwater Quality

Groundwater quality in the shallow portion of the overburden aquifer northeast of the landfill footprint is monitored by five monitoring wells as follows (from closest to furthest from the landfill footprint): EBA11-1, EBA11-2, MW04-19, AG99-06, EBA11-4, and EBA11-3.



The following table presents ranges of leachate indicator parameter concentrations observed in 2019 at northeast shallow wells compared to background groundwater quality to illustrate the difference, if any, in groundwater quality between these two areas. If leachate indicator concentrations are greater in the northeast wells compared to background groundwater conditions, it may be indicative of MSW leachate impact to groundwater quality downgradient of the landfill footprint. The table is arranged from closest to furthest from the landfill footprint.

Table 5.5 Leachate Indicator Parameter Concentrations at NE Downgradient Shallow Wells

Parameter	Alk. (mg/L)	NH ₄ (mg/L)	Bo (µg/L)	Cl ⁻ (mg/L)	Cond. (µS/cm)	Hardness (mg/L)	Fe (µg/L)	Mn (μg/L)	pH (S.U)	SO ₄ (mg/L)
EBA11-1	133 – 391	ND 0.0025 - 0.0230	62 – 83	4.04 – 120	299 – 1010	158 – 534	ND 5 – 144	ND 0.05 - 1850	7.11 – 7.78	11.8 – 25.8
EBA11-2	121 – 189	ND 0.0025	11 – 25	4.6 – 14.7	231 – 370	129 – 192	ND 5 – 61	ND 0.05 - 0.67	7.34 – 7.88	2.11 – 4.89
MW04-19	55.1	ND 0.0025	ND 5	2.21	112	49.7	ND 5	1.31	8.08	3.73
AG99-06	69.3 – 175	ND 0.0025	ND 5	4.14 – 9.14	156 – 323	71.1 – 159	ND 5 – 53	0.16 – 6.53	7.19 – 8.18	1.54 – 2.92
EBA11-4	47.1 – 53.6	ND 0.0025	ND 5	3.99 – 7.53	104 – 128	43.8 – 55.5	ND 5 – 427	ND 0.05 - 11.7	7.20 – 8.82	1.88 – 2.43
EBA11-3	45.5 – 65.9	ND 0.0025	ND 5	4.76-17. 8	135 – 159	63.0 – 76	ND 5	ND 0.05 - 0.2	7.10 – 8.45	2.21 – 2.98
Background (MW01-16)	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 - 0.14	6.76 – 6.90	2.26 – 2.46

ND – Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; µg/L - micrograms per litre; µS/cm - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Cond.: Conductivity.

Conductivity – measured in the lab; pH – measured in the field.

Red - Concentration greater than applicable CSR standard

Detailed Northeast Downgradient Area groundwater analytical results are presented in Tables 5.10 and 5.11. Historical Downgradient Area groundwater chemistry trend plots of selected leachate indicator parameters are presented in Appendix I (Figures I-7 and I-8).

Based on historical data presented in Figures I-7 and I-8, and the 2019 data presented in the above table, the following interpretations regarding groundwater quality at the Downgradient Area wells have been developed:

- Groundwater quality at EBA11-2 continues to show generally stable, mild leachate impacts based on slightly elevated levels of alkalinity, chloride, conductivity, hardness, and sulphate when compared to background conditions.
- MW04-19 was installed in October 2019, therefore only one round of sampling was undertaken at this well in 2019. Concentrations of leachate indicator parameters in MW04-19 are similar to background concentrations, with slight elevations of alkalinity, chloride, conductivity,



- manganese, pH and sulphate. Further monitoring is required to further characterize the water quality at MW04-19 and discern any trends.
- Chloride concentrations in groundwater at AG99-06 appear to seasonally fluctuate with the peak
 during the summer monitoring events then decreases during the fall/winter monitoring events.
 Chloride concentrations in groundwater at AG99-06 appear to have stabilized since the end of
 2017. Further monitoring is required to determine if chloride concentrations at AG99-06 remain
 stable.
- Iron concentrations were greater than the typical range in groundwater samples collected from AG99-06 during the April/May and June 2019 monitoring events, but decreased to historical ranges during the September and November 2019 monitoring events.
- In November 2017, chloride concentrations in groundwater at EBA11-3 were significantly higher
 than historical chloride ranges at this monitoring location and elevated concentrations continued
 to be observed in 2018. Chloride concentrations in samples collected in 2019 returned to
 pre-2017 ranges. Additionally, other leachate indicator parameters appear to be improving and
 reaching historical levels in groundwater quality at EBA11-3.
- In order to supplement the evaluation of potential landfill-related impacts to groundwater quality, an analysis of the geochemical "fingerprints" of Site groundwater quality was undertaken. This analysis was accomplished through plotting major anion and cation on a Piper plot for the November 2019 groundwater chemistry (Figure 5.3). A piper plot presents the major ions as percentages and is used to determine patterns in the geochemical character of water samples. Cations (positive ions) and anions (negative ions) are potted in two triangles at the base of the diagram. The compositions from the base triangles are then projected up to the central diamond. This central diamond therefore presents the data from all of the major ions on a single plot. On a Piper plot, samples with similar geochemical character will plot relatively close to one another. Because the major ions are used, a Piper plot is useful for detecting large differences in the geochemical characteristics between water samples. Data on the central diamond presents a line of evidence that assists in interpreting the likelihood of a monitoring location being affected by landfill-derived impacts or a differing source. The likelihood of impacts can be gauged by the monitor's proximity to leachate and other locations showing definite leachate-derived impacts. From review of the Piper plot in Figure 5.3, the source of influence in groundwater at EBA11-3 does not have a similar geochemical "signature" as landfill impacted wells HBT94-1 and/or EBA04-7. In the 2018 Annual Operations and Monitoring Report (GHD, 2019), GHD hypothesized a salt storage shed located west of Block J may be a potential source of elevated chloride concentrations at EBA11-3. It also is noted that a private landfill is located approximately 400 m west of Block J.
- Groundwater quality at EBA11-1 changed in 2019 with increased manganese, iron, chloride, hardness, and alkalinity concentrations. Dissolved manganese concentrations in groundwater sampled at EBA11-1 increased over 2019 from approximately 0.05 μg/L to 1,850 μg/L during the November 2019 monitoring event. Iron concentrations in groundwater at EBA11-1 were elevated during parts of the 2019 monitoring program. Dissolved iron concentrations were also elevated in samples collected at EBA11-1 during the September and November 2019 monitoring events. Chloride, hardness, and alkalinity concentrations at EBA11-1 were well above historical ranges during the November 2019 monitoring event. From review of the Piper plot in Figure 5.3,



EBA11-1 is an outlier compared to background groundwater location MW01-16 and landfill vicinity locations EBA04-7 and HBT94-1. EBA11-1 plots at the end of a trendline from background location MW01-16 to EBA11-3. This may indicate that the source that was impacting groundwater quality at EBA11-3 in 2017-2018 may be the same source impacting groundwater quality at EBA11-1 in 2019, however further monitoring is required to verify this.

- Groundwater quality at EBA11-4 has generally been similar to background groundwater conditions. However, concentrations of dissolved manganese and iron were notably elevated during the May 2019 monitoring event, but were less than the laboratory detection limits during the June, September, and November 2019 monitoring events. Further monitoring is required to determine if elevated iron or manganese concentrations recur in groundwater at EBA11-4.
- Vanadium concentrations at EBA11-4 are slightly less than the applicable CSR water quality standards. From review of groundwater quality in the immediate vicinity of the landfill footprint (HBT94-1 and HBT94-2), vanadium occurred in concentrations ranging from less than the laboratory detection limit to 0.00129 mg/L in 2019, therefore it is unlikely the Landfill is the source of elevated vanadium concentrations in groundwater quality at EBA11-4.
- VOC analytical results continued to be less than the laboratory detection limits at northeast shallow overburden wells in 2019.

Parameter concentrations were below applicable CSR standards at the northeast shallow groundwater wells for all parameters tested in 2019 with the exception of the following:

Manganese

Manganese concentrations in groundwater quality at EBA11-1 were greater than the CSR DW standard during the fourth quarter 2019 monitoring event. Manganese concentrations in groundwater quality at EBA11-1 significantly increased over 2019. Further monitoring is required to determine if dissolved manganese concentrations continue to increase.

5.3.4.2 Southeast Downgradient Shallow Groundwater Quality

Groundwater quality in the shallow portion of the overburden aquifer southeast of the Site is monitored by HBT94-5, MW02-18, and MW03-18. Groundwater monitoring at HBT94-5 has not been possible since 2000 as the well has been dry during all monitoring events. As stated in Section 2.5, groundwater elevations in the vicinity of the Site have decreased by approximately 2 to 4 m between 1995 and 2003. This apparent regional groundwater elevation decrease is likely the cause for HBT94-5 going dry. Historical analytical results for HBT94-5 are provided in Appendix J. MW02-18 and MW03-18 were installed in July 2018 and were included in all four of the 2019 monitoring events.

Concentrations versus time graphs for selected leachate indicator parameters are presented in Figures I-11 and I-12 in Appendix I.

The following table presents concentration ranges of leachate indicator parameters in groundwater quality at MW02-18 and MW03-18. The purpose of the table is to illustrate the potential landfill derived impact on the shallow portion of the overburden aquifer groundwater quality southeast of the Site.



Table 5.6 Leachate Indicator Parameter Concentrations at SE Downgradient Shallow Wells

Parameter	Alk. (mg/L)	NH₄ (mg/L)	Bo (µg/L)	Cl ⁻ (mg/L)	Cond. (µS/cm)	Hardnes s (mg/L)	Fe (µg/L)	Mn (μg/L)	pH (S.U)	SO ₄ (mg/L)
MW02-18	259 – 417	9.87 – 14.9	478 – 570	0.00011 - 0.00022	553 – 815	156 – 254	28 – 41	1910 – 3090	6.64 – 7.13	2.0 – 3.07
MW03-18	71.4 – 109	ND 0.0025	15 – 24	0.00027 - 0.00033	149 – 197	65.6 – 105	ND 5	ND 0.05	7.83 – 8.28	2.21 – 2.98
Background (MW01-16)	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 – 0.14	6.76 – 6.90	2.26 – 2.46

Notes:

ND - Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; μg/L - micrograms per litre; μS/cm - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl⁻: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Cond.: Conductivity.

 $\label{eq:conductivity-measured} Conductivity-measured in the lab; pH-measured in the field.$

-- Parameter not analyzed.

Red – Concentration greater than applicable CSR standard

From review of Table 5.7. Figures I-11 and I-12, and Appendix J this following interpretations of shallow groundwater quality southeast of the Site have been developed:

- Groundwater quality at MW02-18 shows elevated levels of alkalinity, ammonia, boron, hardness, chloride, iron, and manganese relative to background groundwater conditions, indicating some landfill related impact. Monitoring well MW02-18 is located adjacent to the historic dumping ground, therefore it is difficult to determine if groundwater quality is adversely affected by the dumping ground, the Site, or both.
- Groundwater quality at MW03-18 is similar to background groundwater conditions. MW03-18 is nested with AG99-05, which also shows similar groundwater conditions. Based on the 2019 groundwater sample results, negligible leachate influence is observed in groundwater quality at MW03-18.

Parameter concentrations were below applicable CSR standards at the southeast shallow overburden groundwater wells for all parameters tested in 2019 with the exception of the following:

Manganese

Manganese concentrations in groundwater samples collected at MW02-18 were greater than the CSR DW standards during all four quarters of the 2019 monitoring program with concentrations of 2,410/2,430 μ g/L in May, 1,910 μ g/L in June, 2,280 μ g/L in September, and 2,290/3,090 μ g/L in November 2019. As indicated above, MW02-18 is located adjacent to a former apparent historic dumping ground, therefore groundwater quality at MW02-18 is likely affected by the presence of this dumping ground.

5.3.4.3 Southeast Downgradient Deep Groundwater Quality

Groundwater quality in the deep portion of the overburden aquifer southeast of the Site is monitored by monitoring wells AG99-02, AG99-01, AG99-04, and AG99-05.



The following table presents ranges of leachate indicator parameter concentrations observed in 2019 at southeast deep wells compared to background groundwater quality to illustrate the potential relative impact of landfilling operations on southeast deep groundwater quality. The table is arranged by increasing distance from the landfill footprint.

Table 5.7 Leachate Indicator Parameter Concentrations at SE Downgradient Deep Wells

Parameter	Alk. (mg/L)	NH ₄ (mg/L)	Bo (µg/L)	Cl ⁻ (mg/L)	Cond. (µS/cm)	Hardness (mg/L)	Fe (µg/L)	Mn (µg/L)	pH (S.U)	SO ₄ (mg/L)
AG99-01	99.0 – 125	ND 0.0025	ND 5	1.66 – 3.5	190 – 244	93.3 – 130	ND 5	ND 0.05 – 0.17	6.77 – 7.99	2.63 – 3.22
AG99-02	71.9 – 89.4	ND 0.0025	ND 5	1.2 - 1.71	140 – 166	75.5 – 85.9	ND 5	ND 0.05	7.76 – 8.44	2.29 – 2.86
AG99-04	47.0 – 58.3	ND 0.0025	ND 5	1.12 – 1.16	100 – 114	46.1 – 56.3	ND 5	ND 0.05	7.14 – 8.32	2.37 – 2.58
AG99-05	46.3 – 102	ND 0.0025	ND 5 – 18	0.87 – 3.87	90.8 – 200	41.2 – 101	ND 5	ND 0.05	7.89 – 8.20	2.19 – 2.56
Background (MW01-16)	30.0 – 51.6	ND 0.0025	ND 5	0.75 – 2.19	66.7 – 109	29.6 – 52.2	ND 5	ND 0.05 – 0.14	6.76 – 6.90	2.26 – 2.46

ND – Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; μg/L - micrograms per litre; μS/cm - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Conductivity. Conductivity – measured in the lab; pH – measured in the field.

Detailed analytical results are presented in Tables 5.10 and 5.11. Historical groundwater quality data and graphs of selected leachate indicator parameters are presented in Appendix I (Figures I-9 and I-10).

Based on historical data presented in Figures I-9 and I-10, and 2019 data presented in the above table, the following interpretations regarding groundwater quality at AG99-01, AG99-02, AG99-04, and AG99-05 have been developed:

- Groundwater quality at AG99-01 and AG99-02 continues to show slightly elevated levels of alkalinity, conductivity, and hardness compared to background groundwater conditions indicating a potential slight presence of leachate. This observation is consistent with previous monitoring years.
- Groundwater quality at AG99-04 and AG99-05 continues to demonstrate stable groundwater quality similar to background conditions indicating negligible leachate impacts are present in the deep portion of the overburden aquifer southeast of the landfill footprint.
- In general, it appears that groundwater quality in the deep portion of the overburden aquifer southeast of the landfill footprint is minimally impacted by leachate. As indicated in Section 5.3.4.3, shallow groundwater quality southeast of the landfill appears to be impacted by leachate at MW02-18, however it cannot be determined if the source is the Site or the historic dumping ground or both.



Southeast Downgradient Deep Groundwater Assessment

Parameter concentrations were below applicable CSR standards at the southeast deep overburden groundwater wells for all parameters tested in 2019 with the exception of the following:

 Groundwater quality at AG99-02 had concentrations of vanadium greater than the applicable CSR DW standard of 0.02 mg/L during all monitoring events in 2019.

The elevated vanadium concentrations are not suspected to be related to leachate influence in groundwater quality as vanadium concentrations at monitoring wells adjacent to the Landfill (HBT94-1 and HBT94-2) ranged from less than the laboratory detection limit to 0.00129 mg/L in 2019. At this time, the source of vanadium in groundwater quality at AG99-02 is not known.

5.4 Surface Water Quality Monitoring Results

Site surface water quality is monitored at two surface water locations to the east of the landfill footprint:

- SW-1 on a tributary of Cold Creek approximately 1,100 m east of the Landfill.
- SW03-17 an unnamed pond located upstream of SW-1, approximately 1,000 m east of the Landfill.

As previously discussed, there is no direct surface water discharge from the Site to the ephemeral tributaries east of the Site. The depth of groundwater in the vicinity of the tributaries is unknown and as such the discharge of groundwater to the tributaries cannot be confirmed without further investigation. The monitoring wells closest to the Cold Creek tributaries included in the Site's monitoring program are nested wells MW03-18 and AG99-05, which are located approximately 900 m west of SW-1. Groundwater levels at AG99-05 ranged from 19.8 to 22.5 m below top of riser (BTOR) in 2019. Groundwater levels at MW03-18 ranged from 19.8 to 22.5 m BTOR in 2019. However, as previously stated, the depth to groundwater adjacent to the Cold Creek tributaries has not been investigated.

The following table presents the 2019 surface water analytical results for leachate indicator parameters indicated in Section 5.3.1 of this Annual Report. These parameters are selected to best indicate the potential presence of leachate in surface water downgradient of the Site.

Table 5.8 Surface Water Results Summary

Parameter	Alk. (mg/L)	NH₄ (μg/L)	Bo (µg/L)	Cl ⁻ (mg/L)	Cond. (µS/cm)	Hardness (mg/L)	Fe (µg/L)	Mn (μg/L)	pH (S.U)	SO ₄ (mg/L)
SW-1 (tributary of Cold Creek)	6.9 – 29.4	0.0051 – 0.0450	ND 5	3.42 – 3.93	29.0 – 77.8	8.53 – 28.3	49 – 255	3.05 – 68.7	5.51 – 7.85	0.61 – 5.77
SW03-17 (Pond upstream of SW-1)	6.6 – 7.5	ND 0.0025 – 0.0086	ND 5	3.27 – 3.71	27.9 – 30.3	7.75 – 8.02	26 - 48	2.29 – 5.55	6.07 – 8.68	0.90 – 1.08

ND – Parameter concentration below laboratory detection limit.

mg/L - milligrams per litre; μ g/L - micrograms per litre; μ S/cm - microSiemens per centimeter.

Alk: alkalinity, NH₄: Ammonia, Bo: boron, Cl⁻: chloride, Fe: iron, Mn: manganese, SO₄: sulphate, Conductivity. Conductivity – measured in the lab; pH – measured in the field.



Detailed surface water analytical results are presented in Table 5.12. Historical surface water quality data and graphs (Figures I-13 and I-14) of the selected parameters are presented in Appendix I.

Based on historical data presented in Figures I-13 and I-14, and 2019 data presented in the above table GHD has identified the following:

- From review of the 2019 monitoring results, surface water quality at SW-1 and SW03-17 does not appear to be influenced by leachate. This observation is based on low level of leachate indicator parameters including alkalinity, ammonia, chloride, and conductivity levels.
- Water quality data collected from the Quinsam River upstream of the confluence of the Quinsam River and Cold Creek periodically displayed similar levels of aluminum, copper, iron, and manganese (Kangasniemi, 1989) compared to water quality observed at SW-1 and SW03-17 in 2019. It appears that the aluminum, copper, iron, and manganese concentrations observed at SW-1 and SW03-17 are naturally occurring or originating from an upstream source.

WQGs include both acute (short-term) and chronic (long-term) guidelines for most parameters analyzed at surface water monitoring locations on Site. For screening purposes, analytical results presented in Table 5.12 were compared to the most stringent available guideline (typically the chronic (long term) guideline).

Identified analytical results elevated above the most stringent WQG include dissolved oxygen (DO), field pH, alkalinity, field temperature, aluminum, cadmium, iron, and manganese as indicated in Table 5.12. The DO, field pH, alkalinity, temperature, aluminum, iron, and manganese results are generally consistent with previous monitoring years and are suspected to be related to ambient temperatures during the summer months (i.e., DO and temperature) or naturally occurring conditions (pH, alkalinity, aluminum, iron, manganese).

Dissolved cadmium concentrations at SW03-17 were greater than the applicable FAW WQG during the November 2019 monitoring event, however, previous results for this location have been less than the applicable WQG or laboratory detection limit. As previously indicated, there are no direct surface water linkages between the Site and the pond SW03-17 is located on, therefore leachate migration from the Site to the pond may only occur through groundwater migration. Groundwater results at MW03-18, which is upgradient of the pond, but downgradient of the Site show cadmium concentrations that are less than the laboratory detection limit since it was installed in summer 2018.

5.4.1 Surface Water Monitoring Program Amendments

The 2017 DOCP indicated the surface water monitoring program for the Site should be evaluated to potentially include surface water sampling locations from the surface water management infrastructure. In 2019, the majority of the Site's surface water management infrastructure was constructed, therefore, GHD proposes to include the SWM Pond in the Site's EMP.

This location was selected to characterize the surface water within the SWM Pond. The proposed parameters for this surface water sampling location will be the same parameters as the other surface water sampling locations in the Site's EMP:

 General chemistry parameters: alkalinity, chloride, conductivity, fluoride, hardness, pH, sulphate, total dissolved solids (TDS)



- Nutrients: ammonia, nitrate, nitrite
- Dissolved metals and total metals

The location of the proposed surface water monitoring location is indicated on Figure 3.1.

6. Summary

The following summarizes the findings of the Annual Report:

Operations

- Construction of the Stormwater Management Pond, including inlet and outlet structures and ditching, and improvements to the landfill's north perimeter surface water ditching and south surface water management piping, was completed in 2019.
- The remaining airspace volume for the Site as of December 31, 2019, is 91,508 m³. At this time, the Site is forecasted to reach capacity in the first quarter of 2022.
- The CVRD received a notice dated March 21, 2019, from ENV regarding non-compliance with
 the requirements of the LFG Regulation. The primary non-compliance item noted in the letter is
 the landfill gas collection system was not constructed at the Site by the required deadline. At this
 time, the final cover system and LFG collection system at the Site are scheduled to be
 constructed in 2022 to 2023.
- ENV is currently in the process of reviewing and updating the Site's OC in response to the CVRD's OC amendment application.
- In 2019, the CVRD received Board approval for a composting facility on Block J of the Site. The design of the compost facility is scheduled to be completed in 2020.
- A new monitoring well (MW04-19) was installed in 2019 immediately downgradient of the surface water management pond.

Monitoring Program

- Groundwater was sampled as per the 2019 monitoring specification, with the following exceptions:
 - GLL93-4 and HBT94-5 were dry for all 2019 monitoring events. These monitoring wells have been historically dry.
 - AM02-01 was dry during all 2019 monitoring events. AM02-01 has historically been periodically dry.
 - EBA04-4 was found to be damaged in 2018, preventing it from being sampled in April/May,
 June, and September 2019. EBA04-4 was decommissioned in October 2019.
 - EBA04-3 became inaccessible due to construction of the surface water management pond, preventing it from being sampled in 2019. As a result it was decommissioned in October 2019.
- Groundwater contours were generated for the Site using the water level data collected in November 2019. The groundwater contours were consistent seasonally and with previous years.



- The observed groundwater flow direction is to the east across the Site.
- Vertical groundwater gradients were calculated using the nested wells on Site. The results indicated a slight downward gradient at nested wells EBA04-6/EBA04-7 and MW03-18/AG99-05.
- Groundwater quality results obtained in 2019 were assessed across the Site with the following observations:
 - Background Water quality results for the background monitoring well MW01-16 was found
 to be characterized by low and stable concentrations of MSW leachate indicator
 parameters. During the November 2019 monitoring event field, conductivity, total alkalinity
 and hardness concentrations were slightly elevated compared to historical ranges.
 - Shallow Landfill Vicinity Groundwater quality at monitoring wells located in the shallow portion of the overburden aquifer in the immediate vicinity of the landfill footprint indicate the presence of leachate parameters above background concentrations. Parameter concentrations were less than the applicable CSR standards in groundwater in the shallow portion of the overburden aquifer for all parameters analyzed in 2019 with the exception of manganese at HBT94-1.
 - Deep Landfill Vicinity Monitoring wells located in the deep portion of the overburden aquifer within the immediate vicinity of the landfill footprint also indicate low level presence of leachate in groundwater at HBT94-2 and EBA04-6. Concentrations are generally lower than in the shallow overburden aquifer wells, indicating attenuation is occurring. Parameter concentrations were less than applicable CSR standards in deep Landfill Area wells for all parameters analyzed in 2019.
 - Northeast Downgradient Shallow Groundwater quality northeast of the Site in the shallow portion of the overburden aquifer shows generally stable low level leachate impacts. There appeared to be increases in some parameters in 2019 compared to historical results, namely iron and manganese concentrations in groundwater at EBA11-3 and EBA11-4. Parameter concentrations were below applicable CSR standards at the northeast shallow overburden groundwater wells for all parameters tested in 2019 with the exception of manganese at EBA11-1.
 - Northeast Downgradient Deep Groundwater quality in the deep portion of the overburden aquifer northeast of the landfill footprint was previously monitored by EBA04-3, which was decommissioned in 2019. The deep portion of the overburden aquifer northeast of the landfill footprint was monitored by EBA04-6 and MW04-19 during 2019.
 - Southeast Downgradient Shallow Groundwater quality in the shallow portion of the overburden aquifer southeast of the Site indicates low level leachate impact to groundwater based on elevated concentrations of key leachate indicator parameters compared to background concentrations at monitoring well MW02-18. Water quality at MW03-19 appears to be similar to background concentrations, and thus leachate impact is not observed at this location considering the 2019 analytical data. Parameter concentrations were less than applicable CSR standards at the southeast shallow overburden groundwater wells for all parameters tested in 2019 with the exception of manganese at MW02-18.
 - Southeast Downgradient Deep Groundwater quality in the deep portion of the overburden aquifer southeast of the Site indicate a slight presence of leachate at monitoring wells



AG99-01 and AG99-02. Monitoring wells AG99-04 and AG99-05 continue to demonstrate stable groundwater quality similar to background conditions, indicating minimal to no leachate impacts at these locations. Parameter concentrations were less than applicable CSR standards at the southeast deep overburden groundwater wells for all parameters tested in 2019 with the exception of vanadium in AG99-02 during all sampling events. The source of vanadium at in groundwater quality at AG99-02 is unknown at this time.

Surface water quality monitoring results obtained in 2019 from SW-1 (tributary of Cold Creek) and SW03-17 (unnamed pond upstream of SW-1) were assessed. There are elevated parameter concentrations which appear to be naturally occurring, these parameters include: pH, dissolved oxygen, alkalinity, aluminum, cadmium, iron, and manganese. Based on the results from the surface water samples, the presence of leachate impacts are not suspected, based on low level of leachate indicator parameters including alkalinity, ammonia, chloride, and conductivity levels.

Recommendations

Based on the findings of the 2019 Annual Operations and Monitoring Report, GHD provides the following recommendations:

Operations

- Continue operating the landfill implementing the 2017 DOCP fill plan.
- Proceed with preparing a Closure Plan report for the Landfill as per the Landfill Criteria. The Landfill is forecasted to reach capacity in approximately 2 years (first quarter of 2022).
- Monitoring wells MW01-16, MW04-19, AM02-19, HBT94-1, HBT94-2, HBT94-3 and AG99-06 were surveyed/resurveyed in November 2019. Comparison of the survey results with the historical survey results indicate some disparities. It is recommended that the CVRD resurvey all existing monitoring wells to obtain accurate coordinates and elevations to assist with hydrogeological interpretation.
- Complete the detailed design of the landfill gas collection system in 2020/2021 in preparation for construction in 2022/2023 to comply with the requirements of the LFG Regulation.

Monitoring Program

- Monitoring well MW04-19 was installed in October 2019. It is recommended that this well be included in the 2020 monitoring program.
- Include the SWM Pond in the Site's surface water monitoring program.
- Include recording the water level measurements as measured at the Ladore Dam by BC Hydro with the Site's EMP.
- Proceed with installing the three proposed monitoring wells at the Site in accordance with schedule provided in the 2017 DOCP, either in 2020 or 2021.



All of which is Respectfully Submitted,

GHD

Chris Thorne, B.Sc.

Michaela Dyck, P.Geo.

Gregory D. Ferraro, P.Eng.

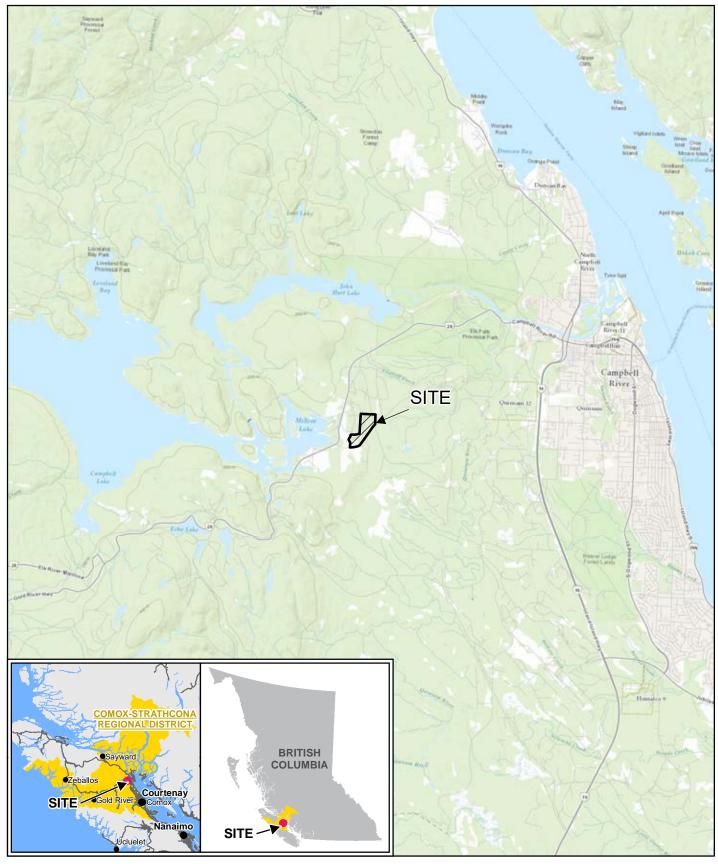


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Source: ESRI Topographic Basemap, Accessed 2020

0 1,000 2,000 3,000

Meters

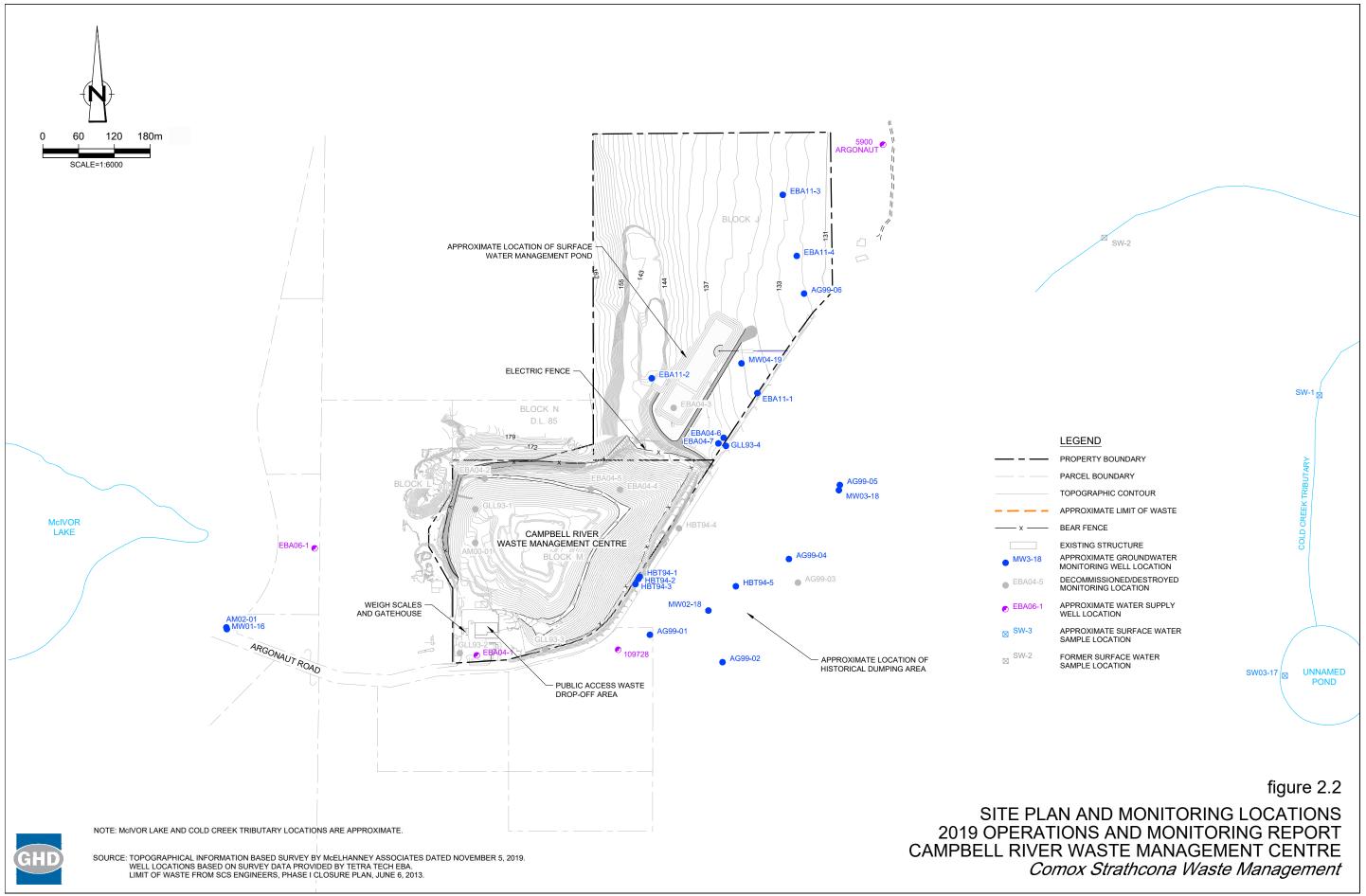
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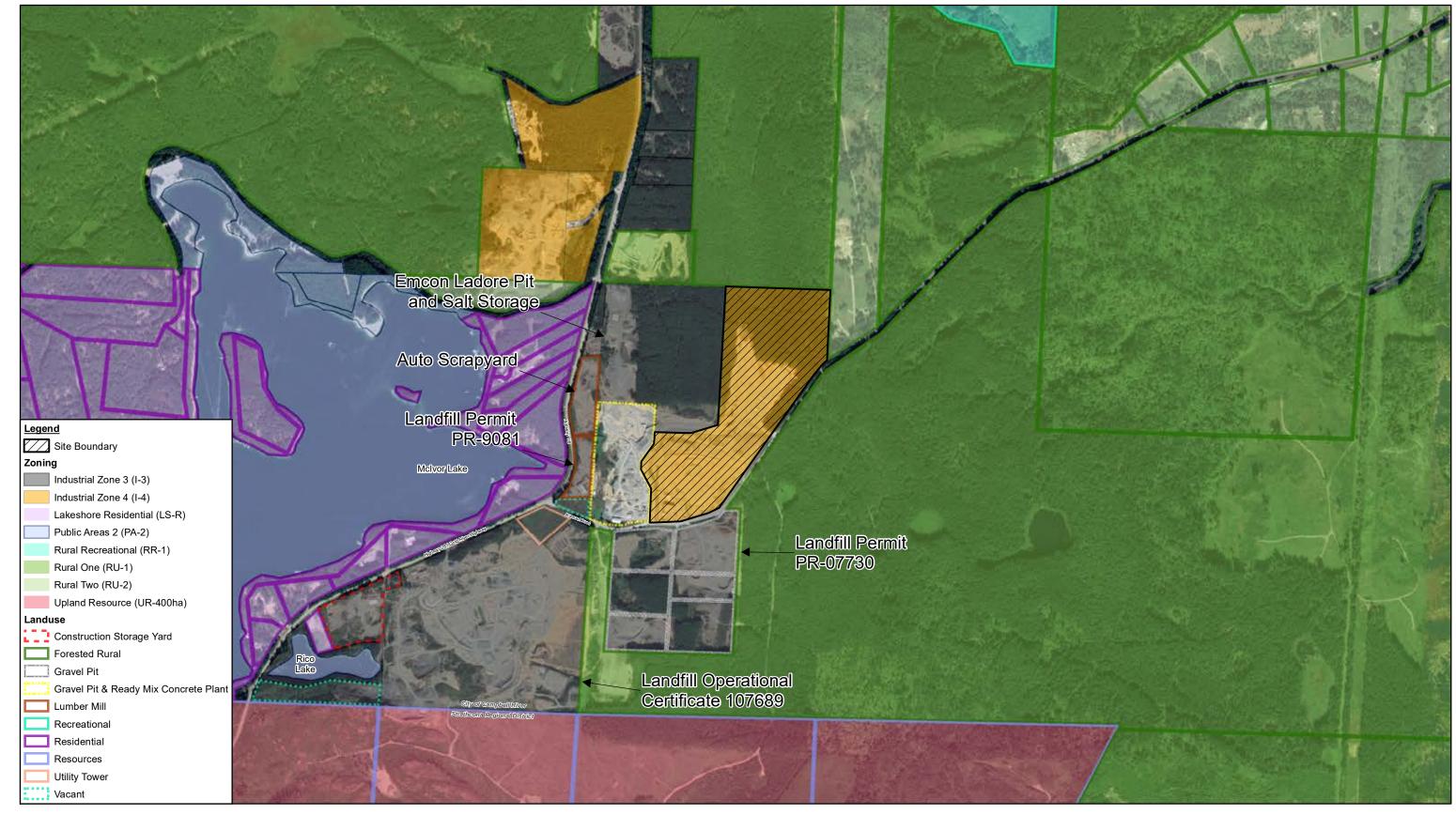


COMOX-STRATHCONA WASTE MANAGEMENT CAMPBEL RIVER WASTE MANAGEMENT CENTRE 2019 OPERATIONS AND MONITORING REPORT

056484 Apr 7, 2020

SITE LOCATION





Sources: CanVec Edition 1.1 @ Department of Natural Resources Canada, all rights reserved; National Road Network 2.0 GeoBase; Property Parcels - City of Campbel River; Google Imagery, Date 11/24/20



Coordinate System: NAD 1983 UTM Zone 10N

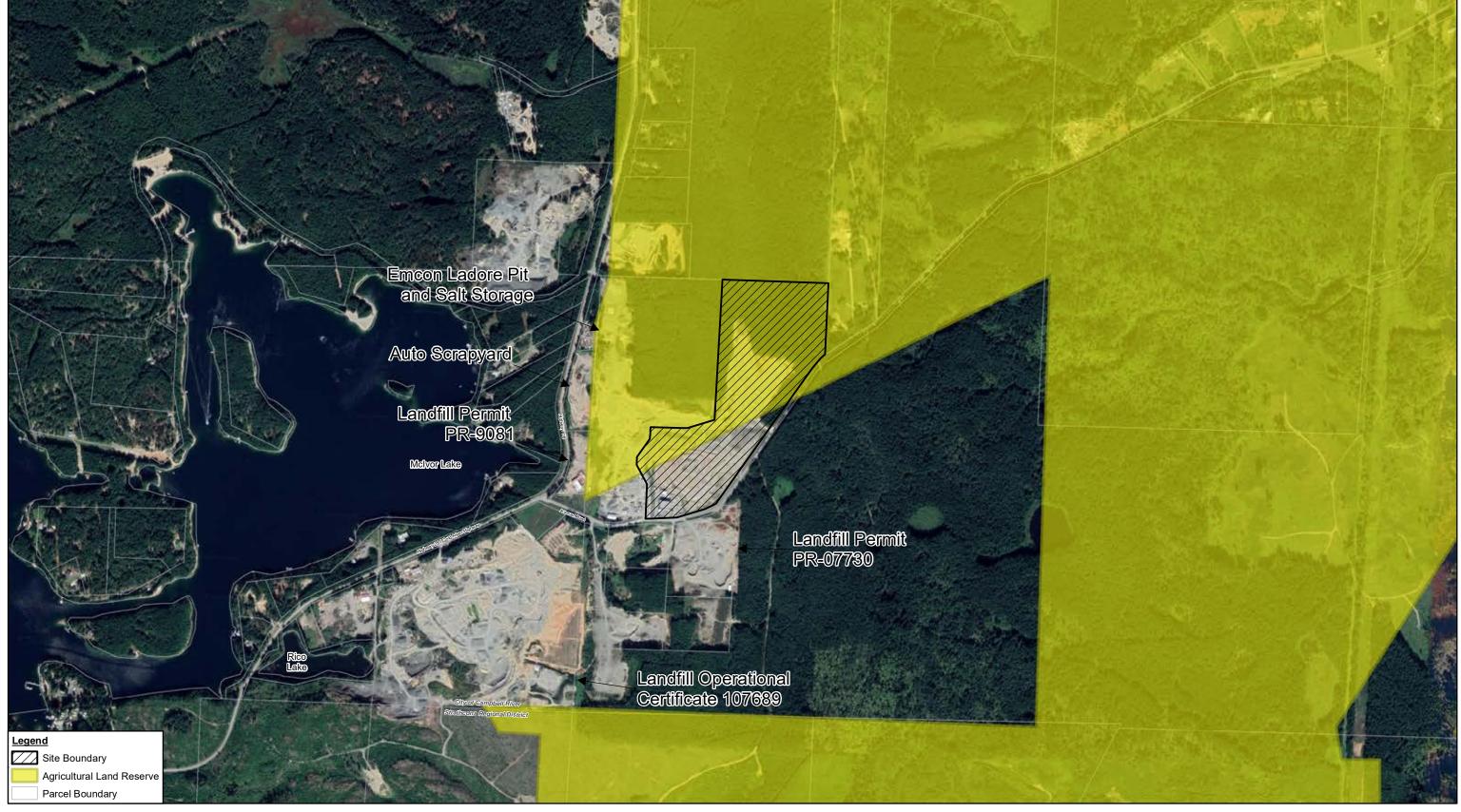




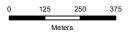
COMOX-STRATHCONA WASTE MANAGEMENT CAMPBEL RIVER WASTE MANAGEMENT CENTRE 2019 OPERATIONS AND MONITORING REPORT

056484 Apr 7, 2020

SITE AREA ZONING AND LAND USE



ources: CanVec Edition 1.1 @ Department of Natural Resources Canada, all rights reserved; National Road Network 2.0 GeoBase; Property Parcels - City of Campbel River; Google Imagery, Date 11/24/2019, Agricultural Land Reserve from Provincial Agricultural Land Commission, accessed 2



Coordinate System: NAD 1983 UTM Zone 10N

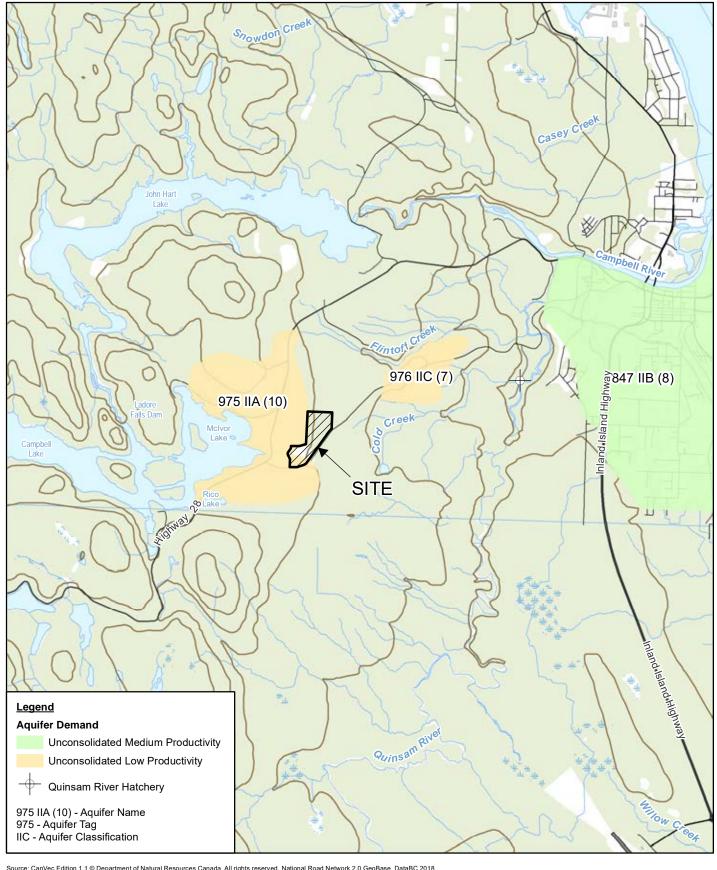




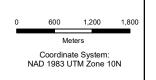
COMOX-STRATHCONA WASTE MANAGEMENT CAMPBEL RIVER WASTE MANAGEMENT CENTRE 2019 OPERATIONS AND MONITORING REPORT

056484 Apr 7, 2020

AGRICULTURAL LAND RESERVE BOUNDARIES



Source: CanVec Edition 1.1 © Department of Natural Resources Canada. All rights reserved. National Road Network 2.0 GeoBase. DataBC 2018

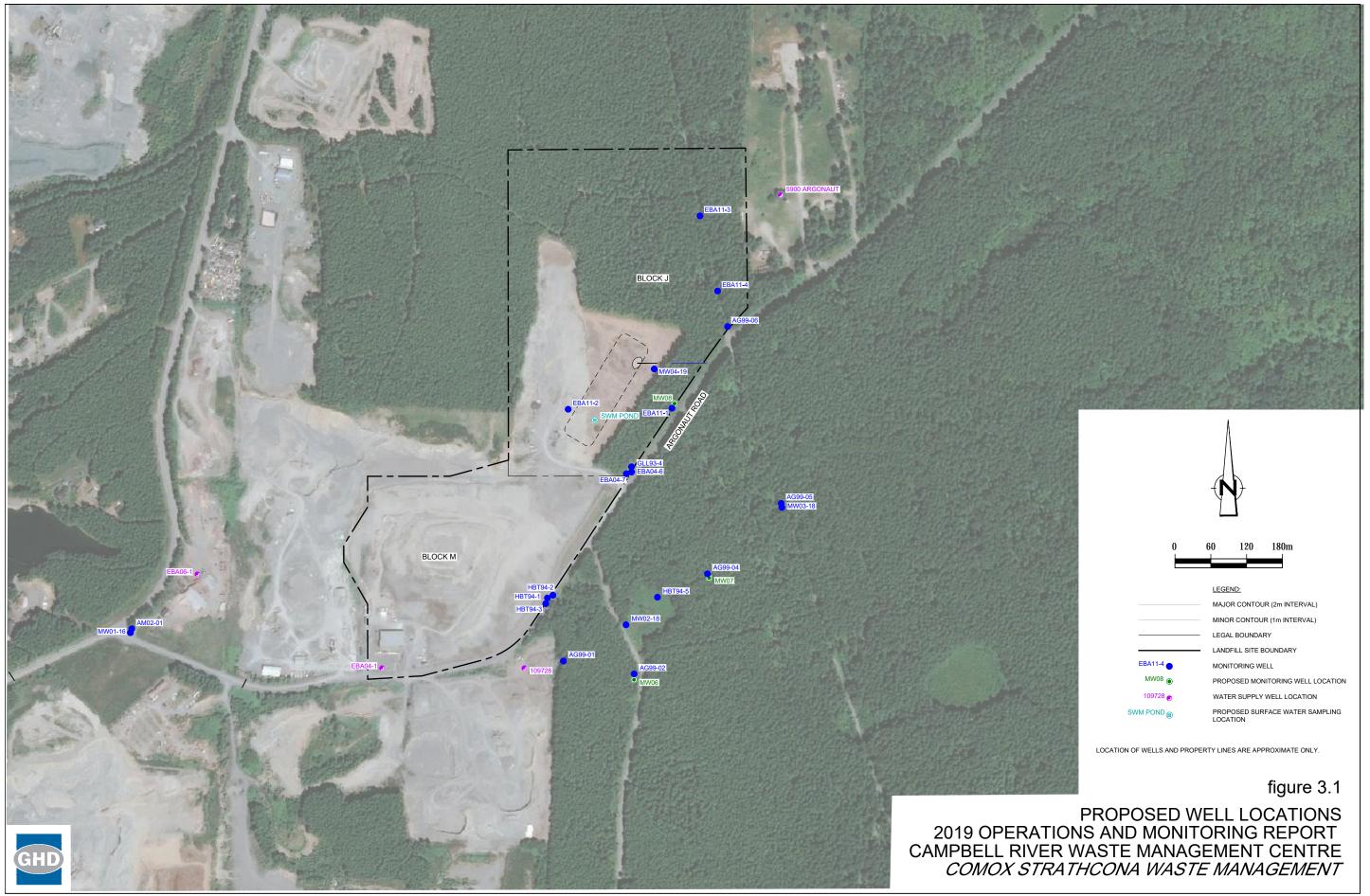


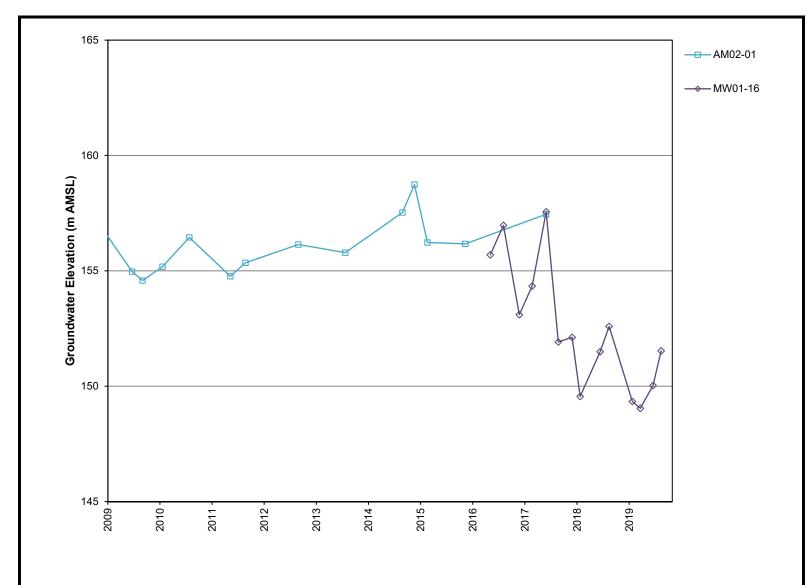


COMOX-STRATHCONA WASTE MANAGEMENT CAMPBEL RIVER WASTE MANAGEMENT CENTRE 2019 OPERATIONS AND MONITORING REPORT

056484 Apr 7, 2020

DRAINAGE MAP



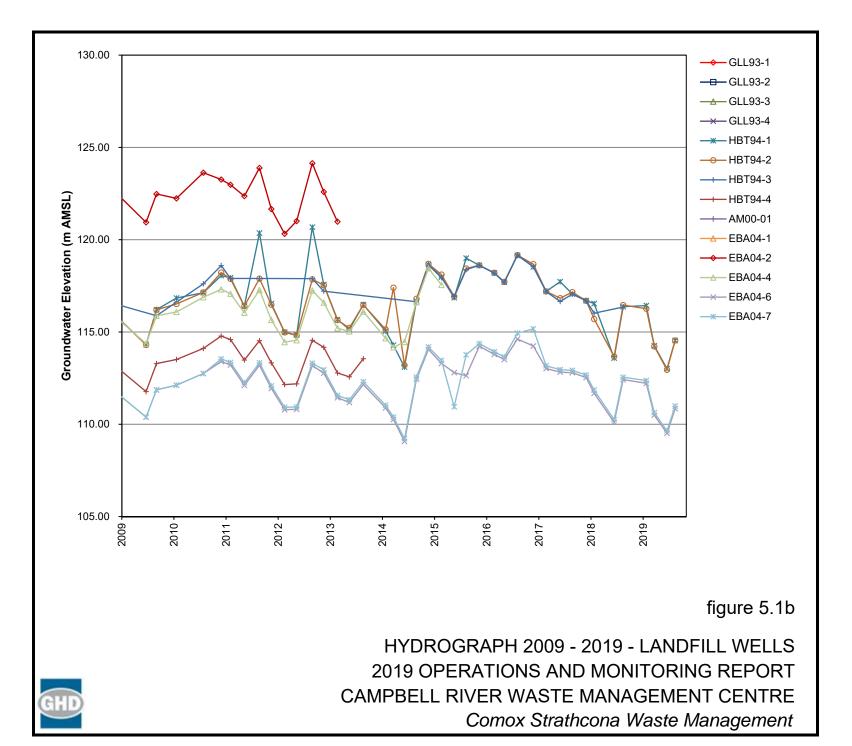


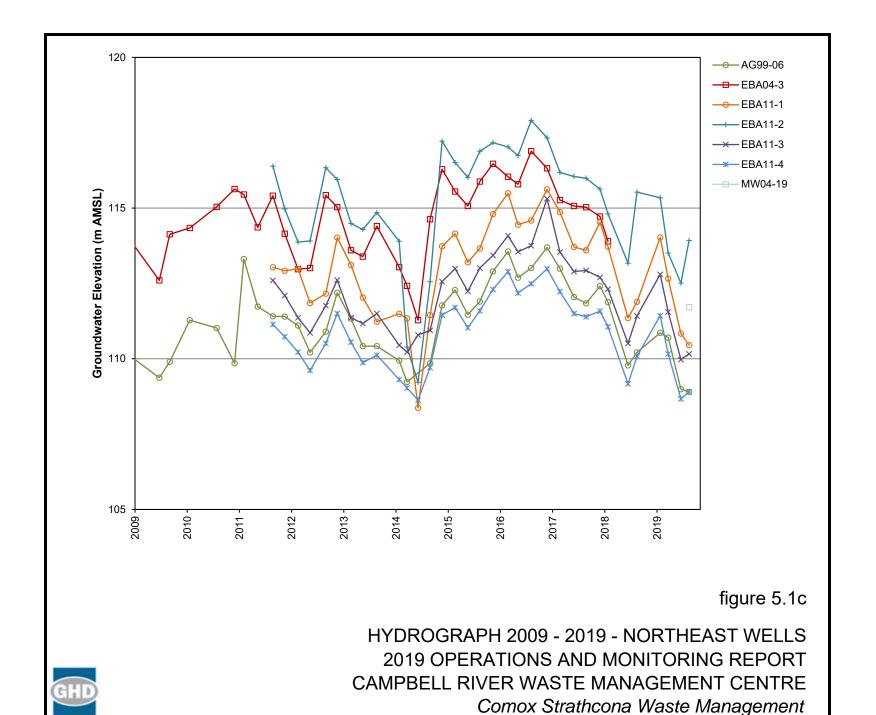
Note: AM02-01 dry during all 2019 monitoring events

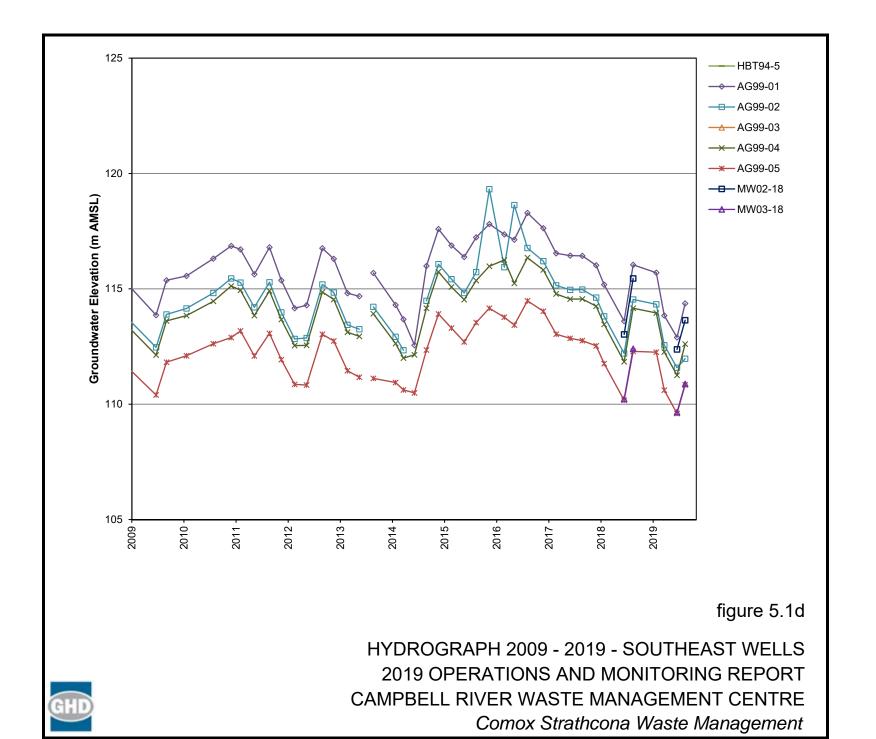
figure 5.1a

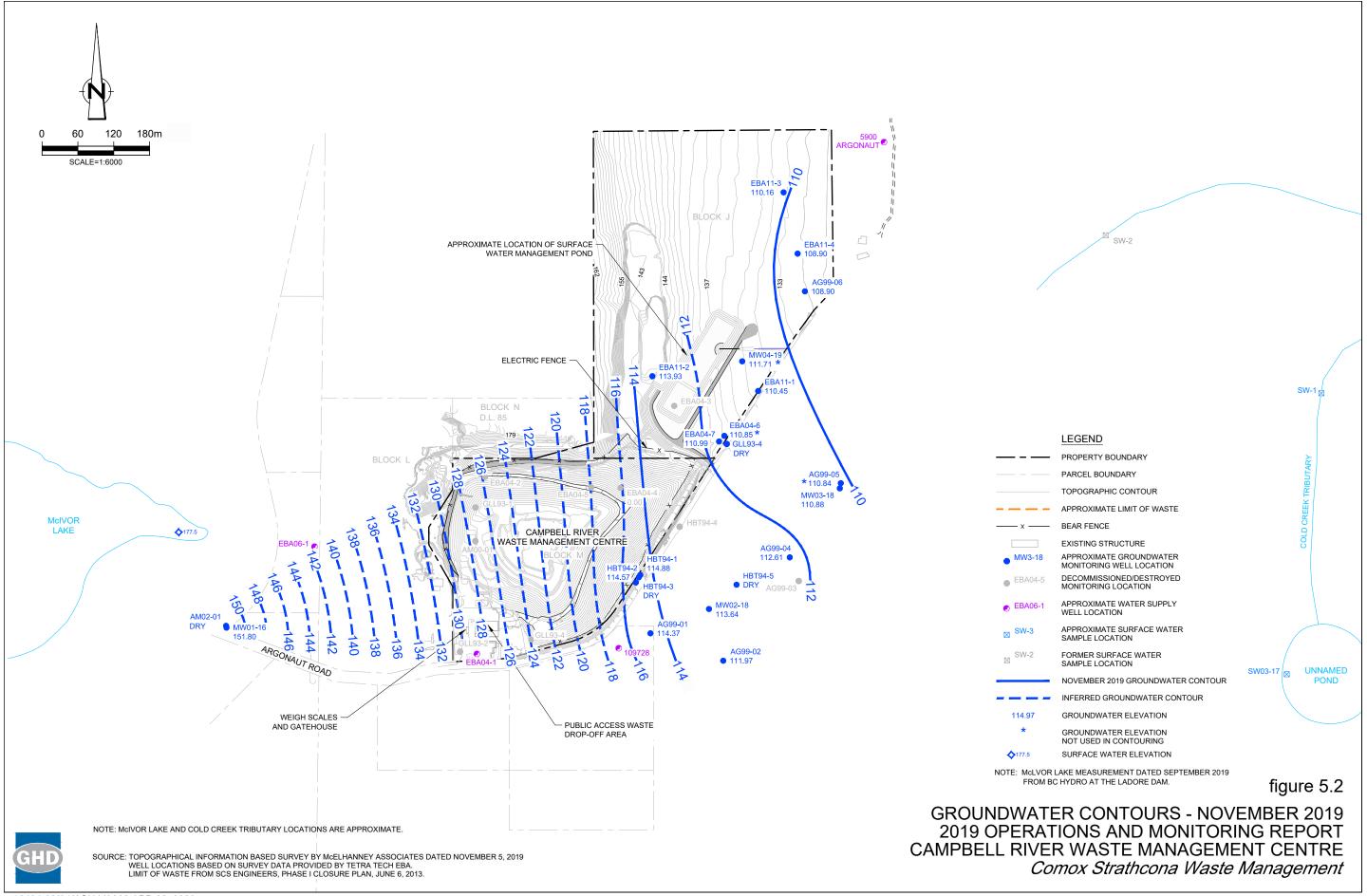


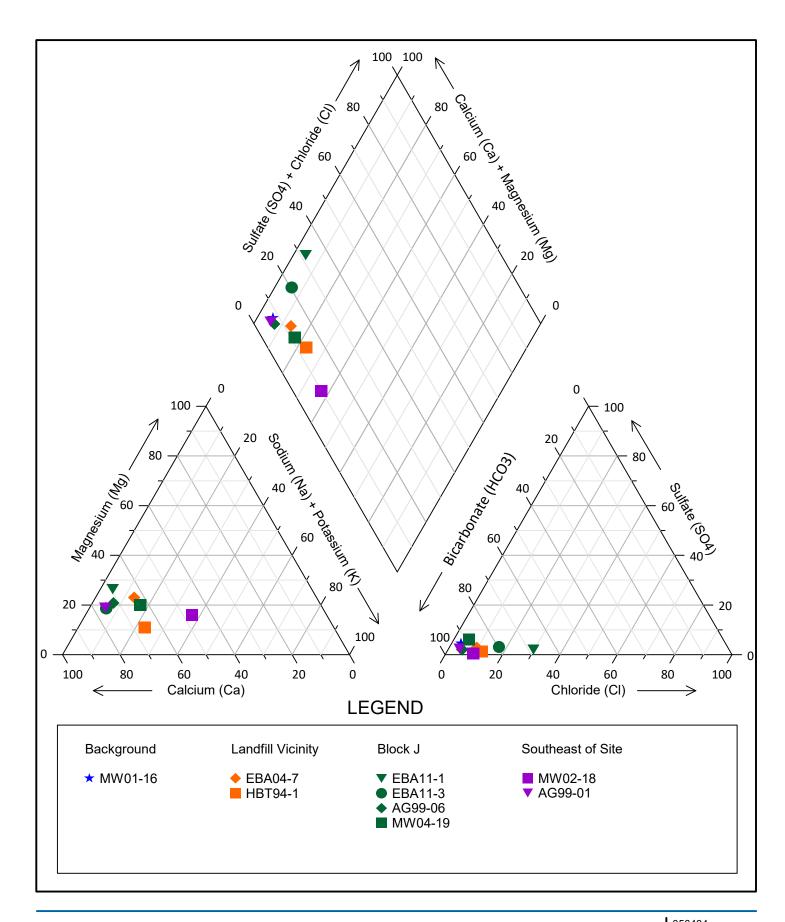
HYDROGRAPH 2009 - 2019 - BACKGROUND WELLS 2019 OPERATIONS AND MONITORING REPORT CAMPBELL RIVER WASTE MANAGEMENT CENTRE Comox Strathcona Waste Management













CAMPBELL RIVER WASTE MANAGEMENT CENTRE COMOX STRATHCONA WASTE MANAGEMENT 2019 OPERATIONS AND MONITORING REPORT

NOVEMBER 2019 GROUNDWATER DATA - PIPER PLOT

056484 March 16, 2020

FIGURE 5.3

Table 3.1

Waste Tonnage and Diversion 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

	Units	2019	
WASTE DISCHARGED TO LANDFILL (1)			
Waste from CRWMC wasteshed			
Construction Waste	tonnes	3,043	
ICI & Household	tonnes	19,128	
Municipal Waste by Contract	tonnes	4,268	
Volunteer Clean Up	tonnes	39	
Asbestos	tonnes	841	
Streetside cleanup/illegal dumping	tonnes	0	
Total Waste Discharged to Landfil	<u> </u>	27,318	
Total Waste Discharged to Landin	<u> </u>	27,310	_
RECYLED/DIVERTED MATERIAL(1)			
Battery Sales	tonnes	18	
Clean Wood Waste	tonnes	521	
Cut Grass & Raked Leaves	tonnes	112	
Drywall/Gypsum waste	tonnes	564	
Scrap Metal Sales	tonnes	734	
Weigh only (tires etc.)	tonnes	34	
Yard Waste	tonnes	226	
Commercial Cardboard/Recycling	tonnes	4	
Recycle BC	tonnes	134	
Total Recycled/Diverted Materia	nl	2,347	
Clean fill used as cover		1,890	
Total Material Delivered	d	31,556	

Notes:

(1) Campbell River Waste Management Centre Yearly Tonnage Summary CRWMC - Campbell River Waste Management Centre

Table 3.2

Waste Area Population and Projected Population 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Year	Estimated Population ⁽¹⁾⁽²⁾
2019	43,641
2020	43,946
2021	44,254
2022	44,564
2023	44,876

Notes:

 $^{^{(1)}}$ 2016 population sourced from Stats Canada for City of Campbell River, Village of Sayward, Village of Gold River, and Strathcona electoral areas A, B, C, and D

⁽²⁾ Annual population growth rate of 0.7% (Stats Canada, 2016)

Table 4.1

Monitoring Locations and Sampling Frequency 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Monitoring Location	April/May	June	September	November
Groundwater				
MW01-16	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
MW02-18	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
MW03-18	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
MW04-19 ⁽¹⁾	-	-	-	$\sqrt{}$
AG99-01	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
AG99-02	\checkmark	$\sqrt{}$	\checkmark	$\sqrt{}$
AG99-04	\checkmark	$\sqrt{}$	\checkmark	$\sqrt{}$
AG99-05	\checkmark	$\sqrt{}$	\checkmark	$\sqrt{}$
AG99-06	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
AM02-01	Dry	Dry	Dry	Dry
EBA04-1	Inaccessible	Inaccessible	$\sqrt{}$	$\sqrt{}$
EBA04-3 ⁽²⁾	-	-	-	Decommissioned
EBA04-4 ⁽³⁾	-	-	-	Decommissioned
EBA04-6	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
EBA04-7	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
EBA11-1	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
EBA11-2	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
EBA11-3	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
EBA11-4	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
GLL93-4	Dry	Dry	Dry	Dry
HBT94-1	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
HBT94-2	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
HBT94-3	Dry	Dry	Dry	Dry
HBT94-5	Dry	Dry	Dry	Dry
Surface Water				
SW-1	$\sqrt{}$	Dry	$\sqrt{}$	$\sqrt{}$
SW03-17	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$

Notes:

- $\sqrt{\,\text{-}\,}$ Sample collected and submitted for laboratory analysis.
- Not included in sampling event.
- (1) MW04-19 was installed in October 2019
- (2) Monitoring well EBA04-3 was inaccessible in 2019 due to presence of the surface water pond. Well was decommissioned in October 2019.
- (3) Monitoring well EBA04-4 was previously damaged and then decommissioned in October 2019.

Table 4.2

Well Completion Details and Hydraulic Monitoring 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

	Total	Top of					Screen				2019 Water Level	s					
Location	Depth	Riser		Screene	d Interval		Length	30-A _l	pr-19	25-J	un-19	22-Se	ep-19	18-No	v-19	Screened Unit	Screened Lithology
	(m BTOR)	(m AMSL) ⁽¹⁾	(m B	STOR)	(m A	MSL)	(m)	(m AMSL)	(m BTOR)	(m AMSL)	(m BTOR)	(m AMSL)	(m BTOR)	(m AMSL)	(m BTOR)		
MW01-16	43.17	187.18	38.60	41.64	148.15	145.10	3.1	149.61	37.568	149.31	37.87	150.30	36.883	151.80	35.38	Shallow overburden	Sand and gravel
MW02-18	32.66	138.79	31.14	32.66	107.65	106.13	1.5	115.88	22.91	113.74	25.05	112.38	26.415	113.64	25.15	Shallow overburden	Sand
MW03-18	27.21	132.10	25.68	27.21	106.42	104.89	1.5	112.32	19.785	110.67	21.431	109.65	22.45	110.88	21.219	Shallow overburden	Sand and gravel
MW04-19	36.12	136.32	32.31	35.36	104.01	100.96	3.1	-	-	-	-	-	-	111.71	24.612	Shallow overburden	Silty sand
AG99-01	48.50	144.19	46.50	48.50	97.69	95.69	2.0	115.70	28.49	113.84	30.348	112.89	31.296	114.37	29.823	Deep overburden	Gravel
AG99-02	51.51	139.85	49.00	51.00	90.85	88.85	2.0	114.33	25.52	112.56	27.293	111.58	28.268	111.97	27.879	Deep overburden	Gravel, some sand and cobbles
AG99-04	45.42	136.44	38.00	45.00	98.44	91.44	7.0	113.96	22.485	112.26	24.176	111.25	25.187	112.61	23.831	Deep overburden	Gravel, some sand and cobbles
AG99-05	50.90	132.09	44.00	50.00	88.09	82.09	6.0	112.26	19.835	110.61	21.481	109.60	22.492	110.84	21.25	Deep overburden	Sand, trace silt
AG99-06	45.11	132.69	22.00	25.00	110.69	107.69	3.0	110.86	21.835	110.70	21.99	108.99	23.697	108.90	23.793	Shallow overburden	Sand, trace silt
AM02-01	33.20	186.86	19.00	34.00	167.86	152.86	15.0	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	Shallow overburden	Sand
EBA04-1	68.30	164.74	62.90	65.50	101.84	99.24	2.6	Water Tap	-	Water Tap	-	Water Tap	-	Water Tap	-	Deep overburden	Sand and gravel
EBA04-3 (2)	41.20	142.20	38.10	41.20	104.10	101.00	3.1	Inaccessible	-	Inaccessible	-	Inaccessible	-	Decommissioned	-	Deep overburden	Sand and gravel
EBA04-4	53.40	163.27*	50.20	53.30	113.07	109.97	3.1	Damaged	-	Damaged	-	Damaged	-	Decommissioned	-	Deep overburden	Sand, sand and gravel interlayers
EBA04-6	39.60	136.34	38.10	39.60	98.24	96.74	1.5	112.22	24.12	110.49	25.849	109.51	26.83	110.85	25.492	Deep overburden	Sand and gravel
EBA04-7	32.00	136.40	30.50	32.00	105.90	104.40	1.5	112.37	24.03	110.63	25.77	109.65	26.755	110.99	25.415	Shallow overburden	Sand and gravel
EBA11-1	28.96	134.77	25.60	28.70	109.17	106.07	3.1	114.03	20.745	112.66	22.11	110.83	23.936	110.45	24.32	Shallow overburden	Sand, trace/some silt
EBA11-2	35.00	141.55	32.00	35.00	109.55	106.55	3.0	115.34	26.21	113.51	28.04	112.51	29.04	113.93	27.624	Shallow overburden	Sand, gravelly, trace silt
EBA11-3	30.18	134.19	27.10	30.18	107.09	104.01	3.1	112.80	21.39	111.55	22.64	109.97	24.22	110.16	24.03	Shallow overburden	Sand, trace gravel
EBA11-4	29.57	133.13	25.90	29.00	107.23	104.13	3.1	111.43	21.7	110.16	22.97	108.67	24.461	108.90	24.228	Shallow overburden	Sand, trace gravel, trace/some silt
GLL93-4	19.40	137.39	16.50	19.40	120.89	117.99	2.9	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	Shallow overburden	Sand
HBT94-1	34.00	142.33	31.00	34.00	111.33	108.33	3.0	116.77	25.56	114.59	27.74	113.35	28.985	114.88	27.452	Shallow overburden	Sand, trace silt and gravel
HBT94-2	44.00	142.08	41.00	43.00	101.08	99.08	2.0	116.29	25.79	114.25	27.835	112.98	29.105	114.57	27.515	Deep overburden	Sand, some silt
HBT94-3	27.00	142.61	25.00	27.00	117.61	115.61	2.0	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	Shallow overburden	Gravel
HBT94-5	32.00	138.29	20.00	22.00	118.29	116.29	2.0	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	Shallow overburden	Sand, silty

Notes:

Well details for monitoring wells installed prior to 2016 sourced from Hydrogeologic Assessment and Closure Plan, Piteau Associates Engineering Ltd., April 1998. MW01-16, AM02-01, MW04-19, AG99-06, HBT94-1, HBT94-2, HBT94-3 were surveyed/resurveyed in 2019.

Monitoring well EBA04-3 was inaccessible in 2019 due to construction of the surface water pond.

(1) Well details for monitoring well
(2) Monitoring well EBA04-3 was in
m BTOR metres below top of riser
m AMSL metres above mean sea level
not applicable/not available

Groundwater Analytical Results - General Chemistry, Nutrients, Metals 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Comple Legation				AG99-01	AG99-01	AG99-01	A C00 04	AG99-02	AG99-02	AG99-02	A C 00 02	AC00.03	AC00.04	AG99-04	AG99-04	AG99-04	AG99-05	AG99-05
Sample Location: Sample ID:		B.C.	CSR	WG-56484-300419-		WG-56484-230919	AG99-01 - WG-56484-181119-	WG-56484-010519-	WG-56484-260619-		AG99-02 WG-56484-181119-	AG99-02 · WG-56484-181119-	AG99-04 WG-56484-010519-			WG-56484-181119-		
Sample Date:			fule 3.2	CF-03 4/30/2019	CT-25 6/26/2019	NT-10 9/23/2019	NT-04 11/18/2019	CF-14 5/1/2019	CT-24 6/26/2019	NT-15 9/23/2019	NT-05 11/18/2019	NT-06 11/18/2019	CF-13 5/1/2019	CT-11 6/25/2019	NT-18 9/23/2019	NT-08 11/18/2019	NT-12 5/1/2019	CT-10 6/25/2019
Sample Date.		DW	FAW	4/30/2019	0/20/2019	9/23/2019	11/10/2019	3/1/2019	0/20/2019	3/23/2019	11/10/2019	Duplicate	3/1/2019	0/23/2019	9/23/2019	11/10/2019	3/1/2019	0/25/2019
Parameters	Units	а	b															
Field Parameters																		
Conductivity, field Oxidation reduction potential (ORP), field	uS/cm millivolts		-	175 172	165 215	160 376	220 188	145 233	103 189	123 280	190 193	190 193	96 243	71 191	71 260	130 133	194 204	141 175
pH, field	s.u.			7.94	7.99	7.25	6.77	8.06	8.44	8.40	7.76	7.76	7.14	8.29	8.32	7.86	8.19	8.18
Temperature, field	Deg C		-	13.05	14.34	9.54	10.69	11.88	13.09	9.86	11.31	11.31	12.48	13.60	9.09	10.37	11.20	13.22
Total dissolved solids, field (TDS) Turbidity, field	g/L NTU			0.114 9.8	0.107 4.1	0.104 15.1	0.143 3.3	0.094 0	0.067 0	0.080 0.0	0.123 0.7	0.123 0.7	0.062 0	0.046 0	0.046 0.0	0.085 0.0	0.126 1.7	0.091 1.5
•	MIO			0.0	7.1	10.1	0.0	· ·	Ŭ	0.0	0.7	0.7	Ü	Ü	0.0	0.0	1.7	1.0
General Chemistry Alkalinity, bicarbonate	mg/L		_	99.0	121	125	105	76.3	71.9	84.3	88.6	89.4	48.3	47.0	53.9	58.3	102	91.7
Alkalinity, carbonate	mg/L			ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	4.4
Alkalinity, hydroxide	mg/L			ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Alkalinity, total (as CaCO3) Bromide	mg/L mg/L			99.0	121	125	105	76.3	71.9	84.3	88.6	89.4	48.3	47.0	53.9	58.3	102 ND (0.050)	96.1
Chloride	mg/L	250	1500	1.66	2.59	3.50	2.93	1.20	1.31	1.71	1.40	1.41	1.12	1.19	1.12	1.16	3.87	3.65
Conductivity	uS/cm			191	228	244	190	155	140	165	166	166	100	101	100	114	200	200
Fluoride	mg/L	1.5	[b]	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Hardness Hardness (dissolved)	mg/L mg/L			93.3	130	118	96.4	78.7	75.5 -	83.3	84.4	- 85.9	47.1	46.1	47.0	- 56.3	101	90.8
pH, lab	s.u.			8.19 J	8.24 J	8.28 J	8.09 J	8.15 J	8.09 J	8.13 J	8.16 J	8.16 J	7.97 J	8.04 J	8.03 J	7.98 J	8.24 J	8.32 J
Sulfate	mg/L	500	[b]	2.69	3.06	3.22	2.63	2.86	2.86	2.73	2.29	2.29	2.37	2.41	2.58	2.42	2.47	2.56
Total dissolved solids (TDS)	mg/L			124	141	148	122	101	88	115	108	104	65	71	72 J	71	123	129
Nutrients																		
Ammonia-N	mg/L	 10	[a] 400	ND (0.0050) 0.175	ND (0.0050) 0.249	ND (0.0050) 0.248	ND (0.0050) 0.146	ND (0.0050) 0.138	ND (0.0050) 0.138	ND (0.0050) 0.181	ND (0.0050) 0.183	ND (0.0050) 0.184	ND (0.0050) 0.0791	ND (0.0050) 0.0991 J	ND (0.0050) 0.142 J	ND (0.0050) 0.123	ND (0.0050) 0.0524	ND (0.0050) 0.0676 J
Nitrate (as N) Nitrite (as N)	mg/L mg/L	10	[c]	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	0.0012	ND (0.0010)	ND (0.0010)	ND (0.0010) J	ND (0.0010) J	ND (0.0010)	ND (0.0010)	ND (0.0010) J
Nitrite/Nitrate	mg/L	10	400	-	0.249	0.248	0.146	0.138	0.138	0.181	0.185	0.184	-	0.0991 J	0.142 J	0.123	-	0.0676 J
Dissolved Metals																		
Aluminum (dissolved)	ug/L	9500		2.7	4.7	3.3	2.5	4.8	5.8	4.7	6.4	5.4	4.9	6	4.5	4.8	3.1	3.6
Antimony (dissolved)	ug/L	6	90	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Arsenic (dissolved) Barium (dissolved)	ug/L ug/L	10 1000	50 10000	0.89 1.72	0.8 2.32	0.69 2.23	0.79 1.76	2.43 3.77	2.51 3.48	2.32 3.86	2.29 3.85	2.28 3.98	0.48 0.73	0.44 0.66	0.34 0.66	0.35 0.75	0.41 1.41	0.38 1.34
Beryllium (dissolved)	ug/L	8	1.5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Bismuth (dissolved)	ug/L			ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Boron (dissolved) Cadmium (dissolved)	ug/L ug/L	5000 5	12000 [b]	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.0115)	ND (10) ND (0.0127)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	ND (10) ND (0.005)	18 ND (0.005)
Caesium (dissolved)	ug/L		[5]	ND (0.003)	-	ND (0.003)	ND (0.003)	ND (0.003)	-	ND (0.003)	ND (0.01)	ND (0.0127)	ND (0.003)	-	ND (0.003)	ND (0.003)	ND (0.003)	-
Calcium (dissolved)	ug/L			29900	42800	38200	31200	25200	24400	26000	26500	27200	16200	15800	16000	19400	34200	30700
Chromium (dissolved) Cobalt (dissolved)	ug/L	50 20 (i)	10 40	0.44 ND (0.1)	0.42 ND (0.1)	0.49 ND (0.1)	0.57 ND (0.1)	0.47 ND (0.1)	0.58 ND (0.1)	0.6 ND (0.1)	0.56 ND (0.1)	0.53 ND (0.1)	0.26 ND (0.1)	0.28 ND (0.1)	0.27 ND (0.1)	0.21 ND (0.1)	0.22 ND (0.1)	0.24 ND (0.1)
Copper (dissolved)	ug/L ug/L	1500	[b]	ND (0.1) ND (0.2)	0.29	ND (0.1) ND (0.2)	ND (0.1) ND (0.51)	ND (0.1) ND (0.2)	ND (0.1) ND (0.2)	ND (0.1) ND (0.2)	ND (0.1) ND (0.45)	ND (0.1)	ND (0.1) ND (0.2)	ND (0.1) ND (0.2)	0.73	ND (0.1) ND (0.62)	0.55	0.9
Iron (dissolved)	ug/L	6500		ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Lead (dissolved)	ug/L	10	[b]	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Lithium (dissolved) Magnesium (dissolved)	ug/L ug/L	8		ND (1) 4530	ND (1) 5710	ND (1) 5420	ND (1) 4510	ND (1) 3810	ND (1) 3540	ND (1) 4450	ND (1) 4420	ND (1) 4350	ND (1) 1640	ND (1) 1600	ND (1) 1700	ND (1) 1920	ND (1) 3700	ND (1) 3460
Manganese (dissolved)	ug/L	1500	-	ND (0.1)	0.17	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Mercury (dissolved)	ug/L	1	0.25	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
Molybdenum (dissolved)	ug/L	250	10000	0.122	0.114	0.092	0.104	0.142	0.139	0.109	0.109	0.101	0.136	0.123	0.134	0.116	0.111	0.1
Nickel (dissolved) Phosphorus (dissolved)	ug/L ug/L	80	[b]	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)	ND (0.5) ND (50)
Potassium (dissolved)	ug/L		-	706	870	827	721	1130	1250	1070	1150	1160	291	283	211	275	529	501
Rubidium (dissolved)	ug/L	==	-	ND (0.2)		ND (0.2)	ND (0.2)	ND (0.2)		ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)		ND (0.2)	ND (0.2)	ND (0.2)	
Selenium (dissolved)	ug/L	10	20	0.104 6090	0.105 6120	0.169 6260	0.122 5990	0.179 6070	0.17 5430	0.183 5660	0.159 5530	0.17 5520	0.114 3950	0.087 4010	0.094 3790	0.127 3610	0.102 4320	0.076 4420
Silicon (dissolved) Silver (dissolved)	ug/L ug/L	20	[b]	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	4320 ND (0.01)	ND (0.01)
Sodium (dissolved)	ug/L	200000	-	2000	2240	2240	2190	1350	1340	1390	1480	1480	1260	1250	1270	1480	2320	1910
Strontium (dissolved)	ug/L	2500		47.3	63.7	60.1	47	30.8	28.1	36	33.8	33.2	25.6	24.8	24.3	28.9	52.5	49.8
Sulfur (dissolved) Tellurium (dissolved)	ug/L ug/L			1060 ND (0.2)	670	950 J ND (0.2)	800 ND (0.2)	940 ND (0.2)	550	800 ND (0.2)	800 ND (0.2)	690 ND (0.2)	900 ND (0.2)	740	520 ND (0.2)	740 ND (0.2)	960 ND (0.2)	720
Thallium (dissolved)	ug/L		3	ND (0.2)	ND (0.01)	ND (0.01)	ND (0.2)	ND (0.01)	ND (0.01)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.01)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.01)
Thorium (dissolved)	ug/L			ND (0.1)	-	ND (0.1)	ND (0.1)	ND (0.1)	-	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	-	ND (0.1)	ND (0.1)	ND (0.1)	-
Tin (dissolved) Titanium (dissolved)	ug/L	2500	1000	ND (0.1) ND (0.3)	ND (0.1)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1)	ND (0.1) ND (0.3)	ND (0.29) ND (0.3)	ND (0.5) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1)
Tungsten (dissolved)	ug/L ug/L	3		ND (0.3) ND (0.1)	ND (0.3)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3)
Uranium (dissolved)	ug/L	20	85	0.079	0.086	0.107	0.088	0.13	0.098	0.127	0.146	0.15	0.027	0.025	0.023	0.035	0.069	0.081
Vanadium (dissolved)	ug/L	20		6.07	5.41	5.32	5.88	22.2ª	22.8ª	21.7 ^a	22.1 ^a	22 ^a	3.26	3.24	2.7	2.62	2.92	2.82
Zinc (dissolved)	ug/L	3000	[b]	ND (1)	1.3	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Zirconium (dissolved)	ug/L			ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)

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Sample Location: Sample ID: Sample Date:		BC CSR Schedule 3.2		AG99-05 WG-56484-230919- NT-12 9/23/2019	AG99-05 WG-56484-191119- NT-15 11/19/2019	AG99-06 WG-56484-300419- NT-06 4/30/2019	AG99-06 WG-56484-250619- CT-15 6/25/2019	AG99-06 WG-56484-220919- NT-05 9/22/2019	AG99-06 WG-56484-191119- NT-18 11/19/2019	EBA04-1 WG-56484-260619- CT-21 6/26/2019	EBA04-1 WG-56484-220919- NT-02 9/22/2019	EBA04-1 WG-56484-181119- NT-03 11/18/2019	EBA04-6 WG-56484-300419- NT-08 4/30/2019	EBA04-6 WG-56484-250619- CT-16 6/25/2019	EBA04-6 WG-56484-220919- NT-08 9/22/2019	EBA04-6 WG-56484-191119- NT-11 11/19/2019	EBA04-7 WG-56484-300419- NT-07 4/30/2019	EBA04-7 - WG-56484-250619- CT-17 6/25/2019
Parameters U	Jnits	DW a	FAW b															
Oxidation reduction potential (ORP), field mil pH, field s Temperature, field D Total dissolved solids, field (TDS)	iS/cm illivolts s.u. Deg C g/L NTU		 	70 318 8.20 10.15 0.045 0.0	105 177 7.89 10.96 0.068 1.2	142 200 7.19 10.31 0.092	150 189 8.18 10.73 0.097	233 310 7.66 8.76 0.151 OOR	194 218 7.55 9.30 0.126 >800	64 197 8.63 18.66 0.041	60 366 7.27 14.77 0.039 26.1	104 194 6.29 10.93 0.068 3.0	618 219 7.14 11.01 0.395 0	474 176 7.37 11.95 0.309	464 293 7.26 9.80 0.301 3.6	581 157 6.91 10.10 0.371 1.2	781 190 6.99 10.49 0.500 1.9	600 198 7.19 11.18 0.384 2.7
Alkalinity, carbonate Alkalinity, hydroxide Alkalinity, total (as CaCO3) Bromide Chloride Conductivity Fluoride Hardness Hardness (dissolved) pH, lab Sulfate nn n	mg/L mg/L mg/L mg/L mg/L mg/L sl/cm mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/	 250 1.5 500	 1500 [b] [b]	47.5 ND (1.0) ND (1.0) 47.5 - 0.92 98.2 ND (0.020) 46.3 - 7.77 J 2.42 70	46.3 ND (1.0) ND (1.0) 46.3 - 0.87 90.8 ND (0.020) - 41.2 7.90 J 2.19 95	69.3 ND (1.0) ND (1.0) 69.3 - 7.33 156 0.024 71.1 - 8.02 J 1.54 105	93.1 ND (1.0) ND (1.0) 93.1 - 9.14 216 0.022 96.1 - 8.21 J 2.25 142	175 ND (1.0) ND (1.0) 175 - 8.09 323 ND (0.020) 159 - 8.29 J 2.92	114 ND (1.0) ND (1.0) 114 - 4.15 209 ND (0.020) - 108 8.02 J 2.55 182	40.2 ND (1.0) ND (1.0) 40.2 - 0.83 82.9 0.021 39.3 - 7.85 J 2.55 58	43.4 ND (1.0) ND (1.0) 43.4 - 0.76 90.7 ND (0.020) 40.7 - 7.94 J 2.34 57	43.0 ND (1.0) ND (1.0) 43.0 - 0.73 85.3 ND (0.020) - 38.4 7.91 J 2.26 56	342 ND (1.0) ND (1.0) 342 - 3.9 624 ND (0.10) 348 - 8.09 J 2.3 397	335 ND (1.0) ND (1.0) 335 - 6.65 619 ND (0.020) 335 - 8.14 J 6.22 411	337 ND (1.0) ND (1.0) 337 - 6.97 639 ND (0.020) 344 - 8.19 J 21.4 393	283 ND (1.0) ND (1.0) 283 - 3.65 506 ND (0.020) - 278 7.92 J 5.64 315	383 ND (1.0) ND (1.0) 383 - 46.3 824 ND (0.10) 389 - 7.97 J 14.1 520	366 ND (1.0) ND (1.0) 366 - 53.6 832 ND (0.10) 385 - 7.99 J 15.3 533
Nitrate (as N) n Nitrite (as N) n	mg/L mg/L mg/L mg/L	 10 1	[a] 400 [c] 400	ND (0.0050) 0.0627 ND (0.0010) 0.0627	ND (0.0050) 0.0658 ND (0.0010) 0.0658	0.0845 0.283 0.0016	ND (0.0050) 0.377 J ND (0.0010) J 0.377 J	ND (0.0050) 0.267 ND (0.0010) 0.267	ND (0.0050) 0.161 ND (0.0010) 0.161	ND (0.0050) 0.0487 ND (0.0010) 0.0487	ND (0.0050) 0.0619 ND (0.0010) 0.0619	ND (0.0050) 0.0466 ND (0.0010) 0.0466	ND (0.0050) 2.92 0.0052	ND (0.0050) 2.40 J 0.0028 J 2.40 J	ND (0.0050) 2.08 ND (0.0010) 2.08	ND (0.0050) 1.93 ND (0.0010) 1.93	ND (0.0050) 1.04 ND (0.0050)	ND (0.0050) 1.15 J ND (0.0050) J 1.15 J
Antimony (dissolved) Arsenic (dissolved) Barium (dissolved) Beryllium (dissolved) Bismuth (dissolved) Boron (dissolved) Boron (dissolved) Cadmium (dissolved) Caesium (dissolved) Calcium (dissolved) Calcium (dissolved) Chromium (dissolved) Cobalt (dissolved) Coper (dissolved) Iron (dissolved) Ir	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	8		5.3 ND (0.1) 0.51 0.65 ND (0.1) ND (0.05) 18 ND (0.005) ND (0.01) 15700 0.29 ND (0.1) 0.45 ND (10) ND (0.05) ND (11) 1740 ND (0.05) ND (11) ND (0.05) ND (11) ND (0.05) ND (11) ND (0.05) ND (10) ND (0.1) ND (0.01) 13900 25.7 600 ND (0.2) ND (0.01)	5.5 ND (0.1) 0.54 0.62 ND (0.1) ND (0.05) 11 ND (0.005) ND (0.01) 14000 0.23 ND (0.1) ND (0.27) ND (10) ND (0.05) ND (1) 1530 ND (0.1) ND (0.05) ND (1) 1530 ND (0.1) ND (0.05) ND (1) 1530 ND (0.1) ND (0.05) 0.127 ND (0.5) ND (50) 332 ND (0.2) 0.109 4030 ND (0.2) 0.109 4030 ND (0.01) 1410 23 700 ND (0.01)	48 ND (0.1) 0.14 1.18 ND (0.1) ND (0.05) ND (10) 0.0327 ND (0.01) 22200 0.78 ND (0.1) 0.5 53 0.06 ND (1) 3780 6.53 ND (0.005) 0.09 ND (0.5) ND (50) 358 0.26 0.176 4890 ND (0.01) 2850 56.1 650 ND (0.2) ND (0.21) ND (0.21) ND (0.21) ND (0.21) ND (0.21) ND (0.11) 0.25 2.1	12.3 ND (0.1) 0.1 0.86 ND (0.1) ND (0.05) ND (10) 0.0085 - 30000 0.81 ND (0.1) 0.38 14 ND (0.05) ND (1) 5140 1.24 ND (0.005) 0.08 ND (0.5) ND (50) 356 - 0.15 4850 ND (0.01) 3170 76.5 630 - ND (0.01) - ND (0.01) 0.51	1.8 ND (0.1) 0.11 0.95 ND (0.1) ND (0.05) ND (10) ND (0.005) ND (0.01) 49200 0.99 ND (0.1) 5.05 ND (10) 0.161 ND (1) 8720 0.16 ND (0.005) 0.102 ND (0.5) ND (50) 440 0.24 0.174 4950 ND (0.01) 4060 129 680 J ND (0.2) ND (0.1) 0.23 ND (0.1) 0.23 ND (0.3)	8.7 ND (0.1) 0.15 4.02 ND (0.1) ND (0.05) ND (10) ND (0.0099) ND (0.01) 33400 0.95 ND (0.1) ND (0.1) ND (0.05) ND (1) ND (0.05) ND (1) S910 3.03 ND (0.005) ND (0.5) ND (50) 3.46 ND (0.2) 0.151 4660 ND (0.2) 0.151 4660 ND (0.01) 3580 78.4 710 ND (0.2) ND (0.01) ND (0.2) ND (0.01) ND (0.1) ND (0.2) ND (0.01) ND (0.01) ND (0.1)	5.4 ND (0.1) 0.65 0.65 ND (0.1) ND (0.05) ND (10) 0.0057 12200 0.97 ND (0.1) 1.17 23 0.16 ND (1) 2160 1.02 ND (0.005) 0.302 ND (0.5) ND (50) 285 - 0.13 5540 ND (0.01) 1550 18.9 ND (500) - ND (500) - ND (0.01) - ND (0.01) ND (0.01)	4.7 ND (0.1) 0.31 0.6 ND (0.1) ND (0.05) ND (10) 0.0055 ND (0.01) 13300 0.33 ND (0.1) 5.42 49 0.323 ND (1) 1790 0.8 ND (0.005) 0.274 ND (0.5) ND (50) 247 ND (0.2) 0.19 4240 ND (0.01) 1030 22.2 600 J ND (0.01)	3.9 ND (0.1) 0.33 0.4 ND (0.05) ND (10) ND (0.05) ND (10) ND (0.0058) ND (0.01) 12800 0.33 ND (0.1) ND (2.14) 18 0.065 ND (1) 1570 0.42 ND (0.005) 0.152 ND (0.5) ND (50) 221 ND (0.2) 0.056 3800 ND (0.01) 1190 20.4 570 ND (0.2) ND (0.01) ND (0.2) ND (0.01) ND (0.1) ND (0.16) ND (0.3)	1 ND (0.1) 0.1 8.41 ND (0.1) ND (0.05) 30 0.012 ND (0.01) 103000 1.28 ND (0.1) ND (0.2) ND (10) ND (0.05) ND (1) 22100 ND (0.1) ND (0.05) ND (0.05) ND (0.5) ND (0.5) ND (0.5) ND (0.5) ND (0.5) ND (0.5) ND (0.05) 12200 ND (0.01) 7840 229 1270 ND (0.01)	ND (1) ND (0.1) ND (0.1) ND (0.1) ND (0.1) 8.38 ND (0.1) ND (0.05) 35 0.0149 - 99500 1.04 ND (0.1) 0.34 ND (10) ND (0.05) ND (10) ND (0.05) ND (11) 20900 0.13 ND (0.005) ND (0.05) ND (0.01) 7240 217 2100 - ND (0.01) 7240 217 2100 - ND (0.01) 7240 - ND (0.01)	ND (1) ND (0.1) ND (0.1) ND (0.1) 8.86 ND (0.1) 97 0.0149 ND (0.01) 104000 0.67 ND (0.1) 0.67 ND (10) ND (0.05) ND (1) 20300 0.35 ND (0.005) ND (0.05) 12000 ND (0.01) 7230 221 6960 J ND (0.01)	1.9 ND (0.1) ND (0.1) 6.76 ND (0.1) 74 ND (0.0267) ND (0.0267) ND (0.01) 83400 1.07 ND (0.45) ND (10) ND (0.45) ND (10) ND (0.05) ND (1) 16900 ND (0.1) ND (0.05) ND (0.01) The control of	ND (1) ND (0.1) ND (0.1) 0.18 16.4 ND (0.1) ND (0.05) 276 0.0446 ND (0.01) 112000 ND (0.1) 0.55 3.75 ND (10) ND (0.05) ND (1) 26400 124 ND (0.005) 0.085 1.7 ND (50) 2280 1.06 0.057 12400 ND (0.01) 32000 301 6000 ND (0.2) ND (0.1)	11.4 ND (0.1) 0.13 16 ND (0.1) 199 0.0374 - 111000 ND (0.1) 0.35 2.43 13 ND (0.05) ND (1) 26200 116 ND (0.005) 0.095 1.05 ND (50) 2230 - ND (0.05) 12600 ND (0.01) 24400 286 5630 - ND (0.01) - ND (0.01) ND (0.01) - ND (0.01) ND (0.01)
Tungsten (dissolved) uranium (dissolved) urani	ug/L ug/L ug/L ug/L ug/L	3 20 20 3000	 85 [b]	ND (0.1) 0.024 3.49 ND (1) ND (0.2)	ND (0.1) 0.018 3.63 ND (1) ND (0.2)	ND (0.1) 0.084 3.06 2 ND (0.06)	0.145 3 ND (1) ND (0.2)	ND (0.1) 0.437 3.24 4.5 ND (0.2)	ND (0.1) 0.321 3.32 3.2 ND (0.2)	0.012 5.35 9.3 ND (0.2)	ND (0.1) 0.011 2.67 14.8 ND (0.2)	ND (0.1) 0.014 2.54 12.7 ND (0.2)	ND (0.1) 0.294 1.66 1.1 ND (0.06)	0.322 1.55 ND (1) ND (0.2)	ND (0.1) 0.346 1.59 ND (1) ND (0.2)	ND (0.1) 0.25 1.65 ND (1) ND (0.2)	ND (0.1) 0.852 1.71 ND (1) ND (0.06)	0.825 1.69 1 ND (0.2)

Groundwater Analytical Results - General Chemistry, Nutrients, Metals 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Sample Location:				EBA04-7	EBA04-7	EBA11-1	EBA11-1	EBA11-1	EBA11-1	EBA11-1	EBA11-1	EBA11-2	EBA11-2	EBA11-2	EBA11-2	EBA11-3	EBA11-3	EBA11-3
Sample ID:		BC CSR	2	WG-56484-220919-	WG-56484-191119-	WG-56484-010519-	WG-56484-010519-	WG-56484-260619-	WG-56484-220919-	WG-56484-220919-	WG-56484-181119-	WG-56484-300419-	WG-56484-260619-	WG-56484-230919	- WG-56484-181119-	WG-56484-300419-	WG-56484-250619-	WG-56484-250619-
Sample Date:		Schedule		NT-09 9/22/2019	NT-10 11/19/2019	CF-18 5/1/2019	CF-19 5/1/2019	CT-26 6/26/2019	NT-06 9/22/2019	NT-07 9/22/2019	NT-09 11/18/2019	NT-02 4/30/2019	CT-20 6/26/2019	NT-14 9/23/2019	NT-02 11/18/2019	CF-05 4/30/2019	CT-12 6/25/2019	CT-13 6/25/2019
Parameters Units		DW a	FAW b				Duplicate			Duplicate								Duplicate
Field Parameters																		
Conductivity, field uS/cm	1		-	522	844	297	297	220	263	263	1150	268	175	184	407	128	110	110
Oxidation reduction potential (ORP), field millivolts	ts			361	266	146	146	235	283	283	-54	155	177	315	157	190	193	193
pH, field s.u. Temperature, field Deg C		-		6.60 9.34	6.82 9.07	7.68 9.70	7.68 9.70	7.78 11.36	7.11 8.81	7.11 8.81	7.28 9.71	7.54 11.31	7.88 11.39	7.78 8.79	7.34 10.54	7.80 10.72	8.45 11.45	8.45 11.45
Total dissolved solids, field (TDS)	,			0.334	0.540	0.193	0.193	0.144	0.171	0.171	0.733	0.174	0.114	0.120	0.264	0.083	0.072	0.072
Turbidity, field NTU		-		1.0	0.7	8.2	8.2	26.7	76.4	76.4	8.0	241	104	161	46.2	28	16.6	16.6
General Chemistry								400	.=-	4=0			404	400	400		45.0	
Alkalinity, bicarbonate mg/L Alkalinity, carbonate mg/L		-		391 ND (1.0)	440 ND (1.0)	132 3.8	133 3.4	133 ND (1.0)	178 6.0	178 5.4	391 ND (1.0)	146 ND (1.0)	121 ND (1.0)	129 ND (1.0)	189 ND (1.0)	61.9 ND (1.0)	45.9 ND (1.0)	45.5 ND (1.0)
Alkalinity, hydroxide mg/L				ND (1.0)	ND (1.0) ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0) ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0) ND (1.0)
Alkalinity, total (as CaCO3) mg/L				391	440	135	137	133	184	183	391	146	121	129	189	61.9	45.9	45.5
Bromide mg/L				-				-					-				-	
Chloride mg/L Conductivity uS/cm		250	1500	40.3 818	33.6 843	4.04 313	4.05 310	10.5 299	12.2 409	12.2 412	120 1010	5.09 287	4.60 231	6.43 243	14.7 370	4.76 135	17.8 159	17.7 159
Fluoride mg/L		1.5	 [b]	ND (0.10)	ND (0.10)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.10)	ND (0.020)	0.020	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Hardness mg/L				399	-	158	165	164	200	198	-	142	129	131	-	64.4	63.0	66.0
Hardness (dissolved) mg/L				-	429	-	-	-	-	-	534	-	-	-	192	-	-	-
pH, lab s.u.				8.06 J	7.68 J	8.32 J	8.31 J	8.18 J	8.31 J	8.31 J	8.09 J	8.20 J	8.20 J	8.14 J	8.14 J	8.01 J	7.99 J	7.99 J
Sulfate mg/L Total dissolved solids (TDS) mg/L		500 	[b] 	13.9 488	12.6 537	20.7 192	20.8 185	14.3 196	25.7 249	25.8 270	11.8 618	2.20 197	2.11 159	2.89 167	4.89 232	2.98 92	2.22 128	2.21 121
Nutrients																		
Ammonia-N mg/L			[a]	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0225	0.0230	0.0229	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Nitrate (as N) mg/L		10	400	1.31	0.784	0.955	0.954	0.369	0.969	1.00	ND (0.025)	0.953	0.807	0.585	0.393	0.0662	0.113 J	0.113 J
Nitrite (as N) mg/L Nitrite/Nitrate mg/L		10	[c] 400	ND (0.0050) 1.31	ND (0.0050) 0.784	ND (0.0010) 0.955	ND (0.0010) 0.954	0.0386 0.408	ND (0.0010) 0.969	0.0019 1.00	ND (0.0050) ND (0.025)	ND (0.0010) -	ND (0.0010) 0.807	ND (0.0010) 0.585	ND (0.0010) 0.393	ND (0.0010) -	ND (0.0010) J 0.113 J	ND (0.0010) J 0.113 J
Dissolved Metals																		
Aluminum (dissolved) ug/L	9	9500		1.1	1.3	2.7	1.9	6.2	4.2	3.2	4.9	3.3	3.8	3.2	17.6	1.6	1.3	ND (1)
Antimony (dissolved) ug/L		6	90	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.2	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Arsenic (dissolved) ug/L Barium (dissolved) ug/L		10 1000	50 10000	0.13 16.1	0.14 16.5	0.26 4.53	0.23 4.5	0.2 4.31	0.94 7.67	0.95 7.46	1.23 20.6	0.12 7.11	0.11 6.28	0.1 6.03	0.17 9.28	0.19 0.58	0.17 0.72	0.17 0.74
Beryllium (dissolved) ug/L		8	1.5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Bismuth (dissolved) ug/L				ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Boron (dissolved) ug/L	5	5000	12000	183	212	81	83	81	69	70	62	16	25	15	11	ND (10)	ND (10)	ND (10)
Cadmium (dissolved) ug/L Caesium (dissolved) ug/L		5	[b] 	0.043 ND (0.01)	0.0482 ND (0.01)	ND (0.005) ND (0.01)	ND (0.005) ND (0.01)	ND (0.005)	ND (0.005) ND (0.01)	ND (0.005) ND (0.01)	0.0573 ND (0.01)	ND (0.005) ND (0.01)	ND (0.005)	ND (0.005) ND (0.01)	ND (0.005) ND (0.01)	ND (0.005) ND (0.01)	ND (0.005)	ND (0.005)
Calcium (dissolved) ug/L		_		117000	127000	45900	48900	48600	58500	58800	155000	37400	34500	35000	56500	20600	19900	20900
Chromium (dissolved) ug/L		50	10	ND (0.1)	ND (0.1)	1.36	1.28	1.46	1.08	1.03	0.34	2.54	2.36	2.09	1.6	0.43	0.33	0.31
Cobalt (dissolved) ug/L		20 (i)	40	0.33	0.37	ND (0.1)	ND (0.1)	ND (0.1)	0.39	0.36	3.93	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Copper (dissolved) ug/L Iron (dissolved) ug/L		1500 3500	[b] 	2.75 ND (10)	ND (2.76) ND (10)	ND (0.2) ND (10)	ND (0.2) ND (10)	0.36 ND (10)	0.29 97	0.22 95	ND (4) 144	ND (0.2) ND (10)	ND (0.2) ND (10)	0.24 ND (10)	ND (0.49) 61	ND (0.2) ND (10)	ND (0.2) ND (10)	ND (0.2) ND (10)
Lead (dissolved) ug/L	`	10	[b]	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Lithium (dissolved) ug/L		8		1.1	1.1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Magnesium (dissolved) ug/L				25700	27100	10400	10500	10400	13100	12400	35700	11900	10300	10500	12400	3120	3220	3350
Manganese (dissolved) ug/L	1	1500	 0.25	128 ND (0.005)	160 ND (0.005)	ND (0.1)	ND (0.1)	9.32	242	235	1850°	ND (0.1)	ND (0.1)	ND (0.1)	0.67	ND (0.1)	ND (0.1)	ND (0.1)
Mercury (dissolved) ug/L Molybdenum (dissolved) ug/L		250	0.25 10000	ND (0.005) 0.106	ND (0.005) 0.103	ND (0.005) 0.051	ND (0.005) 0.055	ND (0.005) 0.069	0.006 0.204	ND (0.005) 0.203	0.0527 0.42	ND (0.005) 0.057	ND (0.005) 0.06	ND (0.005) 0.06	ND (0.005) 0.057	ND (0.005) 0.147	ND (0.005) 0.121	ND (0.005) 0.134
Nickel (dissolved) ug/L		80	[b]	1.07	1.33	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	2	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Phosphorus (dissolved) ug/L				ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Potassium (dissolved) ug/L Rubidium (dissolved) ug/L				2230 1.09	2240 1.13	735 ND (0.2)	734 ND (0.2)	717	870 ND (0.2)	848 ND (0.2)	1460 ND (0.2)	500 0.35	452	435 0.31	1030 0.48	299 ND (0.2)	298	304
Rubidium (dissolved) ug/L Selenium (dissolved) ug/L		10	20	ND (0.05)	ND (0.05)	0.114 J	0.169 J	0.098	ND (0.2) ND (0.05)	0.053	0.121	0.35	0.118	0.31	0.48	0.136	0.097	0.137
Silicon (dissolved) ug/L				12700	13400	7740	7660	6680	7540	7520	7500	8690	8500	8490	8680	4460	4630	4520
Silver (dissolved) ug/L		20	[b]	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	0.063	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Sodium (dissolved) ug/L		00000		26700 309	30000 316	5220 97.8	5210 100	5300 102	5590 124	5680 122	9580 315	4760 75.1	4450 64.4	3860 69.4	4400 115	1710 33.6	1680 35.7	1730 36.5
Strontium (dissolved) ug/L Sulfur (dissolved) ug/L	2	2500		4910 J	5030	97.8 7140	6970	4680	8000 J	8030 J	4910	75.1 850	ND (500)	800	1590	33.6 1070	640	700
Tellurium (dissolved) ug/L				ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)	-	-
Thallium (dissolved) ug/L			3	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Thorium (dissolved) ug/L				ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	- ND (0.4)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	- ND (0.4)	ND (0.1)	ND (0.1)	ND (0.1)	- ND (0.4)	- ND (0.4)
Tin (dissolved) ug/L Titanium (dissolved) ug/L	2	2500	1000	ND (0.1) ND (0.3)	ND (0.16) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) 0.37	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.18) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) 1.01	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)
Tungsten (dissolved) ug/L		3		ND (0.3) ND (0.1)	ND (0.3)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	-	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	ND (0.3) ND (0.1)	-	ND (0.3) ND (0.1)	ND (0.1)	ND (0.3) ND (0.1)	-	-
Uranium (dissolved) ug/L		20	85	0.724	0.666	0.353	0.369	0.288	0.553	0.548	0.968	0.228	0.172	0.186	0.257	0.045	0.03	0.029
Vanadium (dissolved) ug/L		20		1.79	1.76	6.05	5.86	4.84	7.89	7.54	2.72	3.02	3.28	3	2.78	3.67	3.31	3.38
Zinc (dissolved) ug/L	3	3000	[b]	1.7	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	2.4	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Zirconium (dissolved) ug/L				ND (0.2)	ND (0.2)	ND (0.06)	ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)	ND (0.2)

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Complete anti-		50444.0	ED444.0	50.44.4	EBA11-4	EBA11-4	EDA44.4	HBT94-1	HBT94-1	LIDTO4.4	LIDTO4.4	HBT94-2	UDTO 4.0	UDTO 4.0	HBT94-2	MINO4 4C
Sample Location: Sample ID:	BC CSR	EBA11-3 WG-56484-220919- \	EBA11-3 WG-56484-191119- \	EBA11-4 WG-56484-300419-	WG-56484-250619-	WG-56484-220919-	EBA11-4 WG-56484-191119-	WG-56484-010519-	WG-56484-260619-	HBT94-1 WG-56484-230919-	HBT94-1 WG-056484-251119-	WG-56484-010519-	HBT94-2 WG-56484-260619-	HBT94-2 WG-56484-230919-	WG-056484-251119-	MW01-16 WG-56484-300419-
Sample lo.	Schedule 3.2	NT-03 9/22/2019	NT-16 11/19/2019	CF-04 4/30/2019	CT-14 6/25/2019	NT-04 9/22/2019	NT-17 11/19/2019	CF-20 5/1/2019	CT-18 6/26/2019	NT-19 9/23/2019	CT-02 11/25/2019	CF-21 5/1/2019	CT-19 6/26/2019	NT-20 9/23/2019	CT-01 11/25/2019	NT-01 4/30/2019
Parameters Units	DW FAV															
	u D															
Field Parameters Conductivity, field uS/cm		95	176	116	87	78	120	423	438	431	485	217	297	395	433	68
Oxidation reduction potential (ORP), field millivolts pH, field s.u.		389 7.10	199 7.42	173 7.97	178 8.82	392 7.20	197 7.50	-19 7.01	37 7.19	22 6.88	-53 7.29	-55 7.53	-32 7.72	-51 7.65	-53 7.55	230 6.90
pH, field s.u. Temperature, field Deg C		9.77	10.71	12.05	11.00	9.05	10.43	15.20	13.58	9.99	11.85	12.04	12.43	10.32	10.78	11.54
Total dissolved solids, field (TDS) g/L Turbidity, field NTU		0.062 1.5	0.115 8.7	0.075 17.8	0.056 88.5	0.051 58.2	0.078 30	0.275 4.8	0.285 28.6	0.280 115	0.316 0	0.141 21.6	0.193 7.4	0.257 7.1	0.282 7.0	0.044 3.3
•		1.5	0.7	17.0	00.3	36.2	30	4.0	20.0	115	U	21.0	7.4	7.1	7.0	3.3
General Chemistry Alkalinity, bicarbonate mg/L		60.1	65.9	51.9	50.1	53.6	47.1	208	235	312	217	111	182	276	239	33.6
Alkalinity, carbonate mg/L		ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	3.8	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Alkalinity, hydroxide mg/L Alkalinity, total (as CaCO3) mg/L		ND (1.0) 60.1	ND (1.0) 65.9	ND (1.0) 51.9	ND (1.0) 50.1	ND (1.0) 53.6	ND (1.0) 47.1	ND (1.0) 212	ND (1.0) 235	ND (1.0) 312	ND (1.0) 217	ND (1.0) 111	ND (1.0) 182	ND (1.0) 276	ND (1.0) 239	ND (1.0) 33.6
Bromide mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride mg/L Conductivity uS/cm	250 1500	8.65 148	10.0 155	7.53 128	5.65 123	5.28 126	3.99 104	16.5 447	17.1 477	27.1 600	21.1 440	5.69 226	20.7 387	26.5 540	15.9 432	2.19 75.9
Fluoride mg/L	1.5 [b]	ND (0.020)	ND (0.020)	0.020	0.022	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.080)	0.030	0.027	0.027	0.026	ND (0.020)
Hardness mg/L		65.7	70.0	55.5	50.3	51.7	40.0	177	233	246	138	91.0	179	262	- 182	34.2
Hardness (dissolved) mg/L pH, lab s.u.		- 8.03 J	76.0 7.92 J	- 7.98 J	- 8.04 J	8.00 J	43.8 7.88 J	8.32 J	- 8.00 J	7.53 J	7.97 J	- 8.21 J	8.23 J	- 8.22 J	8.16 J	- 7.75 J
Sulfate mg/L	500 [b]	2.60	2.54	2.00	1.88	1.79	2.43	3.02	4.61	0.83	3.35	3.18	2.89	2.99	2.77	2.28
Total dissolved solids (TDS) mg/L		87	146	84	89	73	101	255	245	345 J	228	148	232	325 J	232	55
Nutrients Ammonia-N mg/L	[a]	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	4.32	4.35	3.66	9.24	2.11	2.61	1.94	2.03	ND (0.0050)
Ammonia-N mg/L Nitrate (as N) mg/L	[a] 10 400		0.0674	0.229	0.164 J	0.182	0.220	ND (0.0050)	0.0447	0.0094 J	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050) J	ND (0.0050)	0.0364
Nitrite (as N) mg/L Nitrite/Nitrate mg/L	1 [c] 10 400	ND (0.0010) 0.0662	ND (0.0010) 0.0674	ND (0.0010)	ND (0.0010) J 0.164 J	ND (0.0010) 0.182	ND (0.0010) 0.220	0.0050 ND (0.0051)	0.0337 0.0784	0.0101 J 0.0196 J	ND (0.0010) ND (0.0051)	ND (0.0010) ND (0.0051)	ND (0.0010) ND (0.0051)	ND (0.0010) J ND (0.0051) J	ND (0.0010) ND (0.0051)	ND (0.0010)
Dissolved Metals								(*****,			(,	(*****,	(3.33.3)	((*****,	
Aluminum (dissolved) ug/L	9500	3	1.3	372	5	3.4	4.4	11.4	21	2.4	6.5	297	4.9	5	22.6	3.2
Antimony (dissolved) ug/L Arsenic (dissolved) ug/L	6 90 10 50	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.12 0.37	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1) 1.7	ND (0.1)	ND (0.1)	ND (0.1) 1.56	ND (0.1)
Arsenic (dissolved) ug/L Barium (dissolved) ug/L	1000 1000	0.16 0 0.66	0.19 0.79	1.99 4.32	1.88 1.28	1.84 1.23	1.71 1.29	11.3	0.7 10.3	0.39 19	0.78 9.59	1.7 7.78	1.83 9.29	1.72 12.4	9.52	ND (0.1) 2
Beryllium (dissolved) ug/L	8 1.5		ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Bismuth (dissolved) ug/L Boron (dissolved) ug/L	5000 1200	ND (0.05) 0 ND (10)	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) 145	ND (0.05) 147	ND (0.05) 115	ND (0.05) 216	ND (0.05) 80	ND (0.05) 71	ND (0.05) 62	ND (0.05) 131	ND (0.05) ND (10)
Cadmium (dissolved) ug/L	5 [b]	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.0105)	0.0558	0.032	0.022	0.265	0.0576	0.0163	0.0234	0.0576	ND (0.005)
Caesium (dissolved) ug/L Calcium (dissolved) ug/L		ND (0.01) 21000	ND (0.01) 24400	ND (0.01) 16800	- 15600	ND (0.01) 16300	ND (0.01) 13500	0.08 60500	79900	0.066 82800	0.05 47200	0.01 31200	- 61900	ND (0.01) 89400	ND (0.01) 62800	ND (0.01) 11000
Chromium (dissolved) ug/L	50 10	0.52	0.31	2.11	1.53	1.61	0.66	ND (0.1)	ND (0.1)	0.13	ND (0.1)	0.26	ND (0.1)	ND (0.1)	ND (0.1)	0.16
Cobalt (dissolved) ug/L Copper (dissolved) ug/L	20 (i) 40 1500 [b]	ND (0.1) ND (0.2)	ND (0.1) ND (0.37)	0.3 1.82	ND (0.1) ND (0.2)	ND (0.1) ND (0.2)	ND (0.1) ND (0.27)	0.42 4.92	0.4 2.63	1.08 1.94	0.27 3.14	0.2 2.2	ND (0.1) ND (0.2)	0.11 0.31	0.15 1.42	ND (0.1) ND (0.2)
Iron (dissolved) ug/L	6500	ND (10)	ND (10)	427	ND (10)	ND (10)	ND (10)	1140	262	4890	329	397	268	363	231	ND (10)
Lead (dissolved) ug/L Lithium (dissolved) ug/L	10 [b] 8	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	0.317 ND (1)	0.055 ND (1)	0.089 ND (1)	0.082 ND (1)	0.138 ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)
Lithium (dissolved) ug/L Magnesium (dissolved) ug/L		3230	3680	3270	2790	2660	2420	6400	8190	9620	4820	3200	6040	9320	6170	1630
Manganese (dissolved) ug/L	1500	0.2	ND (0.1)	11.7	ND (0.1)	ND (0.1)	ND (0.1)	2040 ^a	2470 ^a	3810 ^a	1310	514	1010	1280	822	0.14
Mercury (dissolved) ug/L Molybdenum (dissolved) ug/L	1 0.25 250 1000		ND (0.005) 0.158	ND (0.005) 0.074	ND (0.005) 0.094	ND (0.005) 0.105	ND (0.005) 0.065	ND (0.005) 0.503	ND (0.005) 0.557	ND (0.005) 0.281	ND (0.005) 0.396	ND (0.005) 0.405	ND (0.005) 0.312	ND (0.005) 0.24	ND (0.005) 0.222	ND (0.005) 0.125
Nickel (dissolved) ug/L	80 [b]	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	1.33	1.84	1.32	0.96	0.57	0.52	0.57	1.06	ND (0.5)
Phosphorus (dissolved) ug/L Potassium (dissolved) ug/L		ND (50) 310	ND (50) 314	108 1030	ND (50) 843	60 772	ND (50) 922	ND (50) 3860	ND (50) 4820	ND (50) 4780	ND (50) 4470	ND (50) 2140	ND (50) 3150	ND (50) 3300	ND (50) 2590	ND (50) 156
Potassium (dissolved) ug/L Rubidium (dissolved) ug/L		ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	922 ND (0.2)	1.83	4 020 -	1.63	1	0.9	-	0.83	0.59	ND (0.2)
Selenium (dissolved) ug/L	10 20	0.144	0.127	0.296	0.244	0.22	0.215	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	0.079
Silicon (dissolved) ug/L Silver (dissolved) ug/L	20 [b]	4440 ND (0.01)	4480 ND (0.01)	6530 ND (0.01)	6020 ND (0.01)	6190 ND (0.01)	5210 ND (0.01)	7520 ND (0.01)	7330 ND (0.01)	7620 ND (0.01)	6940 ND (0.01)	7280 ND (0.01)	6840 ND (0.01)	7450 ND (0.01)	7110 ND (0.01)	3620 ND (0.01)
Sodium (dissolved) ug/L	200000	1680	1950	3010	2700	2540	3080	18400	20200	20800	16200	8690	11800	10100	11400	1060
Strontium (dissolved) ug/L Sulfur (dissolved) ug/L	2500	36.5 750 J	40.2 620	30.7 770	29.7 550	29.3 720	26.9 690	203 1250	236 1220	244 ND (500)	160 1260	89.1 1110	156 690	206 860	135 1190	15.9 910
Tellurium (dissolved) ug/L		ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)
Thallium (dissolved) ug/L Thorium (dissolved) ug/L	- 3	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)	ND (0.01) ND (0.1)
Thorium (dissolved) ug/L Tin (dissolved) ug/L	2500	ND (0.1)	ND (0.1)	ND (0.1) ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1) ND (0.11)	0.11	0.14	0.1	0.83	0.2	ND (0.1)	0.16	0.36	ND (0.1)
Titanium (dissolved) ug/L	100		ND (0.3)	18.5 ND (0.1)	ND (0.3)	ND (0.3)	ND (0.3)	0.76 ND (0.1)	ND (0.3)	0.48 ND (0.1)	ND (0.3)	28.3 ND (0.1)	ND (0.3)	ND (0.3)	1.14 ND (0.1)	ND (0.3)
Tungsten (dissolved) ug/L Uranium (dissolved) ug/L	3 20 85	ND (0.1) 0.043	ND (0.1) 0.055	ND (0.1) 0.295	0.26	ND (0.1) 0.285	ND (0.1) 0.192	ND (0.1) 0.118	- 0.135	ND (0.1) 0.05	ND (0.1) 0.08	ND (0.1) 0.063	0.095	ND (0.1) 0.184	ND (0.1) 0.131	ND (0.1) ND (0.01)
Vanadium (dissolved) ug/L	20	3.54	3.53	18.9	16.2	16.3	16	ND (0.5)	ND (0.5)	ND (0.5)	0.67	1.29	ND (0.5)	ND (0.5)	ND (0.5)	1.25
Zinc (dissolved) ug/L	3000 [b]	ND (1)	ND (1)	1.2	ND (1)	ND (1)	ND (1)	5.7	6.8	7.6	2.5	1.2	ND (1)	ND (1)	ND (1)	ND (1)
Zirconium (dissolved) ug/L		ND (0.2)	ND (0.2)	0.328	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)	ND (0.2)	ND (0.2)	ND (0.2)	1.02	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.06)

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Sample Location:				MW01-16	MW01-16	MW01-16	MW02-18	MW02-18	MW02-18	MW02-18	MW02-18	MW02-18	MW03-18	MW03-18	MW03-18	MW03-18	MW03-18	MW03-18
Sample ID:		вс	CSR	WG-56484-250619-			WG-56484-010519- CF-16	WG-56484-010519- CF-17			WG-56484-230919- NT-17	WG-56484-181119- NT-07	WG-56484-010519- NT-10				- WG-56484-191119 NT-13	- WG-56484-191119- NT-14
Sample Date:			dule 3.2	CT-07 6/25/2019	NT-01 9/22/2019	NT-01 11/18/2019	5/1/2019	5/1/2019	CT-23 6/26/2019	NT-16 9/23/2019	9/23/2019	11/18/2019	5/1/2019	CT-08 6/25/2019	CT-09 6/25/2019	NT-13 9/23/2019	11/19/2019	11/19/2019
Parameters	Units	DW a	FAW b					Duplicate			Duplicate				Duplicate			Duplicate
Field Parameters																		
Conductivity, field	uS/cm			45	49	117	665	665	411	486	486	904	144	106	106	132	203	203
Oxidation reduction potential (ORP), field	millivolts			291	392	180	76	76	93	142	142	111	209	252	252	296	226	226
pH, field Temperature, field	s.u. Deg C			6.76 9.64	6.88 6.47	6.87 7.30	6.98 11.74	6.98 11.74	7.13 13.95	7.05 9.72	7.05 9.72	6.64 11.35	8.01 11.44	7.94 12.86	7.94 12.86	8.28 10.48	7.83 11.21	7.83 11.21
Total dissolved solids, field (TDS)	g/L			0.029	0.032	0.076	0.426	0.426	0.270	0.316	0.316	0.579	0.094	0.069	0.069	0.085	0.132	0.132
Turbidity, field	NTU			30.9	6.3	7.4	0.2	0.2	0	0.0	0.0	0.2	0.4	4	4	0.0	0.0	0.0
General Chemistry																		
Alkalinity, bicarbonate Alkalinity, carbonate	mg/L mg/L			30.0 ND (1.0)	33.9 ND (1.0)	51.6 ND (1.0)	310 3.4 J	308 ND (1.0) J	259 ND (1.0)	353 ND (1.0)	359 ND (1.0)	417 ND (1.0)	74.9 ND (1.0)	71.4 ND (1.0)	71.7 ND (1.0)	89.3 ND (1.0)	109 ND (1.0)	108 ND (1.0)
Alkalinity, hydroxide	mg/L			ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Alkalinity, total (as CaCO3)	mg/L			30.0	33.9 ′	51.6	313 ′	308	259 ´	353	359	4Ì7 ´	74.9	71.4	71.7 ´	89.3	109	108
Bromide Chloride	mg/L		 1500	- 0.92	0.75	1.20	32.7	32.7	27.6	10.3	10.3	- 31.0	- 1 20	- 1.59	- 1 50	- 4.16	- 2.06	-
Conductivity	mg/L uS/cm	250	1500	0.82 66.7	73.4	109	669	681	553	624	634	815	1.39 149	151	1.58 150	176	2.86 196	2.85 197
Fluoride	mg/L	1.5	[b]	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.050)	ND (0.030)	ND (0.032)	ND (0.10)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Hardness	mg/L			29.6	32.9		205	208	156	187	187	<u>-</u>	72.9	66.3	65.6	85.6	. <u>-</u>	. <u>.</u>
Hardness (dissolved) pH, lab	mg/L			- 7.79 J	- 7.78 J	52.2 7.82 J	- 8.30 J	- 8.08 J	- 8.09 J	- 7.99 J	- 8.02 J	254 7.54 J	- 8.13 J	- 8.21 J	- 8.21 J	- 8.11 J	105 8.16 J	101 8.16 J
pn, lab Sulfate	s.u. mg/L	500	 [b]	2.34	2.26	7.82 J 2.46	3.07	3.06	3.02	7.99 J 2.84	8.02 J 2.84	7.54 J 2.0	2.98	2.68	2.68	2.51	2.21	2.22
Total dissolved solids (TDS)	mg/L	-		57	45	76	350	360	292	368	384	439	96	98	98	118	171	181
Nutrients																		
Ammonia-N	mg/L	 10	[a] 400	ND (0.0050) 0.0279 J	ND (0.0050) 0.0838	ND (0.0050) 0.415	14.9	13.4 ND (0.0050)	11.8	10.5 0.0184	10.6 0.0186	9.87 ND (0.025)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050) 0.146	ND (0.0050)	ND (0.0050) 0.148
Nitrate (as N) Nitrite (as N)	mg/L mg/L	10	400 [c]	0.0279 J ND (0.0010) J	ND (0.0010)	0.415 ND (0.0010)	ND (0.0050) ND (0.0010)	ND (0.0050) ND (0.0010)	ND (0.0050) ND (0.0010)	0.0184	0.0052	ND (0.025) ND (0.0050)	0.225 ND (0.0010)	0.237 J ND (0.0010) J	0.228 J ND (0.0010) J	0.146 ND (0.0010)	0.149 ND (0.0010)	0.148 ND (0.0010)
Nitrite/Nitrate	mg/L	10	400	0.0279 J	0.0838	0.415	ND (0.0051)	ND (0.0051)	ND (0.0051)	0.0230	0.0239	ND (0.025)	-	0.237 J	0.228 J	0.146	0.149	0.148
Dissolved Metals																		
Aluminum (dissolved)	ug/L	9500 6	 90	2.2	2.3	2	1.8	2.2	6.2 ND (0.4)	1.9	1.4	5.2 ND (0.4)	4.8 ND (0.4)	5.5 ND (0.4)	5.1	4.8 ND (0.4)	4.8 ND (0.4)	4.1 ND (0.4)
Antimony (dissolved) Arsenic (dissolved)	ug/L ug/L	10	50 50	ND (0.1) ND (0.1)	ND (0.1) ND (0.1)	ND (0.1) ND (0.1)	ND (0.1) 0.27	ND (0.1) 0.25	ND (0.1) 0.25	ND (0.1) 0.21	ND (0.1) 0.22	ND (0.1) 0.24	ND (0.1) 0.52	ND (0.1) 0.56	ND (0.1) 0.55	ND (0.1) 0.55	ND (0.1) 0.53	ND (0.1) 0.49
Barium (dissolved)	ug/L	1000	10000	1.76	1.52	2.24	30.7	30.4	25.3	30.3	29.6	42.1	2.14	2.03	2.26	2.17	2.68	2.77
Beryllium (dissolved)	ug/L	8	1.5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Bismuth (dissolved) Boron (dissolved)	ug/L ug/L	 5000	 12000	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) ND (10)	ND (0.05) 558	ND (0.05) 570	ND (0.05) 546	ND (0.05) 498	ND (0.05) 478	ND (0.05) 524	ND (0.05) 21	ND (0.05) 20	ND (0.05) 18	ND (0.05) 15	ND (0.05) 24	ND (0.05) 24
Cadmium (dissolved)	ug/L	5	[b]	ND (0.005)	ND (0.005)	ND (0.005)	0.114	0.114	0.0846	0.0833	0.0796	0.119	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.0061)	ND (0.0097)
Caesium (dissolved)	ug/L			<u> </u>	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)		ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	<u> </u>	<u> </u>	ND (0.01)	ND (0.01)	ND (0.01)
Calcium (dissolved) Chromium (dissolved)	ug/L	 50	 10	9510 0.14	10500 0.14	16700 0.19	60400 0.12	61900 0.22	46900 0.12	55800 0.11	54900 0.11	75700 0.11	25700 0.32	23300 0.33	23000 0.31	30000 0.31	37000 0.27	35500 0.29
Cobalt (dissolved)	ug/L ug/L	20 (i)	40	ND (0.1)	ND (0.1)	ND (0.1)	1.52	1.52	1.18	1.34	1.31	1.67	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Copper (dissolved)	ug/L	1500	[b]	ND (0.2)	ND (0.2)	ND (0.33)	18.1	17.7	14.3	13.3	13.6	13.1	0.21	0.23 J	0.46 J	0.95	ND (1.02)	ND (0.7)
Iron (dissolved)	ug/L	6500		ND (10)	ND (10)	ND (10)	41	39	28	31	32	30	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Lead (dissolved) Lithium (dissolved)	ug/L ug/L	10 8	[b] 	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)	ND (0.05) ND (1)
Magnesium (dissolved)	ug/L	-		1430	1620	2560	13200	12900	9420	11700	12200	15800	2120	1970	1980	2580	3060	2920
Manganese (dissolved)	ug/L	1500		ND (0.1)	ND (0.1)	ND (0.1)	2410 ^a	2430 ^a	1910 ^a	2280 ^a	2290 ^a	3090 ^a	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Mercury (dissolved)	ug/L	1	0.25	ND (0.005)	ND (0.005)	ND (0.005)	0.0082	0.0081	0.0067	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
Molybdenum (dissolved) Nickel (dissolved)	ug/L ug/L	250 80	10000 [b]	0.131 ND (0.5)	0.111 ND (0.5)	0.081 ND (0.5)	0.826 3.42	0.851 3.35	0.857 2.39	0.792 1.73	0.839 1.8	0.665 1.83	0.199 ND (0.5)	0.177 ND (0.5)	0.191 ND (0.5)	0.169 ND (0.5)	0.132 ND (0.5)	0.145 ND (0.5)
Phosphorus (dissolved)	ug/L			ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Potassium (dissolved)	ug/L			124	142	145	11800	11300	11300´	10500	11100	13100	570	582	587	568	648	698
Rubidium (dissolved) Selenium (dissolved)	ug/L	 10	 20	0.081	ND (0.2) 0.101	ND (0.2) 0.123	0.52 ND (0.05)	0.52 ND (0.05)	ND (0.05)	0.48 ND (0.05)	0.48 ND (0.05)	0.55 ND (0.05)	0.22 0.167	- 0.142	- 0.159	0.2 0.162	0.23 0.112	ND (0.2) 0.072
Silicon (dissolved)	ug/L ug/L			3310	3240	3450	14800	14600	14200	13500	13500	13700	4350	4400	4430	4340	4290	4580
Silver (dissolved)	ug/L	20	[b]	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Sodium (dissolved)	ug/L	200000		870	911	1270	45300	44500	42000	49700	49400	60600	2750	2700	2760	2850	3170	3000
Strontium (dissolved) Sulfur (dissolved)	ug/L ug/L	2500		14.1 690	14.7 740 J	25.2 690	307 1320	305 1150	231 750	297 910	296 1050	375 1170	44.1 1160	40.4 860	41.6 800	53.5 560	56.2 870	60.2 590
Tellurium (dissolved)	ug/L			-	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	-	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	-	-	ND (0.2)	ND (0.2)	ND (0.2)
Thallium (dissolved)	ug/L		3	ND (0.01)	ND (0.01)	ND (0.01)	0.016	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Thorium (dissolved)	ug/L	2500		- ND (0.4)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	- ND (0.4)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	- ND (0.4)	- ND (0.4)	ND (0.1)	ND (0.1)	ND (0.1)
Tin (dissolved) Titanium (dissolved)	ug/L ug/L	2500	1000	ND (0.1) ND (0.3)	0.18 ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.13) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.1) ND (0.3)	ND (0.11) ND (0.3)	ND (0.1) ND (0.3)
Tungsten (dissolved)	ug/L	3		-	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	- (0.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	-	- (0.0)	ND (0.1)	ND (0.1)	ND (0.1)
Uranium (dissolved)	ug/L	20	85	ND (0.01)	ND (0.01)	ND (0.01)	0.421	0.435	0.255	0.384	0.402	0.523	0.05	0.047	0.049	0.056	0.086	0.078
Vanadium (dissolved)	ug/L	20		0.99	0.98	0.97	1.89	1.77	1.69	1.8	1.79	1.9	2.59	2.54	2.59	2.61	2.67	2.6
Zinc (dissolved) Zirconium (dissolved)	ug/L ug/L	3000	[b]	ND (1) ND (0.2)	1.6 ND (0.2)	ND (1) ND (0.2)	ND (1) ND (0.06)	1.7 ND (0.06)	ND (1) ND (0.2)	ND (1) ND (0.2)	ND (1) ND (0.2)	1 ND (0.2)	ND (1) ND (0.06)	ND (1) ND (0.2)	ND (1) ND (0.2)	ND (1) ND (0.2)	ND (1) ND (0.2)	ND (1) ND (0.2)
Zii ooniidiii (dissoived)	ag/L			ND (0.2)	ND (0.2)	140 (0.2)	140 (0.00)	140 (0.00)	140 (0.2)	140 (0.2)	(U.Z)	140 (0.2)	(U.UU)	ND (U.Z)	140 (0.2)	ND (0.2)	140 (0.2)	ND (0.2)

Sample Location: Sample ID:		PC	CSR	MW04-19 WG-56484-191119
•				NT-12
Sample Date:		DW	dule 3.2 FAW	11/19/2019
Parameters	Units	а	b	
Field Parameters				
Conductivity, field	uS/cm	-		128
Oxidation reduction potential (ORP), field	millivolts			167
pH, field	s.u.			8.08
Temperature, field	Deg C			8.77
Total dissolved solids, field (TDS) Turbidity, field	g/L NTU			0.083 513
Comment Chaminton				
General Chemistry Alkalinity, bicarbonate	mg/L			55.1
Alkalinity, carbonate	mg/L			ND (1.0)
Alkalinity, hydroxide	mg/L			ND (1.0)
Alkalinity, total (as CaCO3)	mg/L			55.1
Bromide	mg/L			-
Chloride	mg/L	250	1500	2.21
Conductivity	uS/cm			112
Fluoride	mg/L	1.5	[b]	0.023
Hardness	mg/L			-
Hardness (dissolved)	mg/L			49.7
oH, lab	s.u.			8.19 J
Sulfate	mg/L	500	[b]	3.73
Total dissolved solids (TDS)	mg/L			85
Nutrients				
Ammonia-N	mg/L		[a]	ND (0.0050)
Nitrate (as N)	mg/L	10	400	0.177
Nitrite (as N) Nitrite/Nitrate	mg/L mg/L	1 10	[c] 400	ND (0.0010) 0.177
viule/iviu ale	mg/L	10	400	0.177
Dissolved Metals		0500		45.4
Aluminum (dissolved) Antimony (dissolved)	ug/L	9500	90	15.1
	ug/L	6 10	90 50	ND (0.1)
Arsenic (dissolved) Barium (dissolved)	ug/L ug/L	1000	10000	0.52 3.71
Barlum (dissolved) Beryllium (dissolved)	ug/L ug/L	8	1.5	3.71 ND (0.1)
Bismuth (dissolved)	ug/L ug/L		1.5	ND (0.1)
Boron (dissolved)	ug/L ug/L	5000	12000	ND (0.03) ND (10)
Cadmium (dissolved)	ug/L ug/L	5	[b]	ND (0.0054)
Caesium (dissolved)	ug/L		[0]	ND (0.0034)
Calcium (dissolved)	ug/L	-		15100
Chromium (dissolved)	ug/L	50	10	2.88
Cobalt (dissolved)	ug/L	20 (i)	40	ND (0.1)
Copper (dissolved)	ug/L	1500	[b]	ND (0.85)
ron (dissolved)	ug/L	6500	[~]	ND (10)
Lead (dissolved)	ug/L	10	[b]	ND (0.05)
Lithium (dissolved)	ug/L	8	 [~]	ND (1)
Magnesium (dissolved)	ug/L	-		2930
Manganese (dissolved)	ug/L	1500		1.31
Mercury (dissolved)	ug/L	1	0.25	ND (0.005)
Molybdenum (dissolved)	ug/L	250	10000	0.372
Nickel (dissolved)	ug/L	80	[b]	ND (0.5)
Phosphorus (dissolved)	ug/L		[~]	ND (50)
Potassium (dissolved)	ug/L			1130
Rubidium (dissolved)	ug/L			0.41
Selenium (dissolved)	ug/L	10	20	0.243
Silicon (dissolved)	ug/L			6940
Silver (dissolved)	ug/L	20	[b]	ND (0.01)
Sodium (dissolved)	ug/L	200000		3980
Strontium (dissolved)	ug/L	2500		34.5
Sulfur (dissolved)	ug/L			1160
Tellurium (dissolved)	ug/L			ND (0.2)
Thallium (dissolved)	ug/L		3	ND (0.01)
Thorium (dissolved)	ug/L			ND (0.1)
Tin (dissolved)	ug/L	2500		ND (0.24)
Titanium (dissolved)	ug/L		1000	ND (0.3)
Tungsten (dissolved)	ug/L	3		ND (0.1)
Uranium (dissolved)	ug/L	20	85	0.138
Vanadium (dissolved)	ug/L	20		4.38
Zinc (dissolved)	ug/L	3000	[b]	ND (1)
Zirconium (dissolved)	ug/L			ND (0.2)
	•			` '

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Table 5.9 Page 6 of 6

Groundwater Analytical Results - General Chemistry, Nutrients, Metals 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Groundwater Analytical Results - Petroleum Products, VOCs 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Sample Location: Sample ID: Sample Date:			CSR ule 3.2 FAW	AG99-06 WG-56484-300419-NT-06 4/30/2019	AG99-06 WG-56484-220919-NT-05 9/22/2019	EBA04-7 WG-56484-300419-NT-07 4/30/2019	EBA04-7 WG-56484-220919-NT-09 9/22/2019	EBA11-1 WG-56484-010519-CF-18 5/1/2019	EBA11-1 WG-56484-010519-CF-19 5/1/2019 Duplicate	EBA11-1 WG-56484-220919-NT-06 9/22/2019
Parameters	Units	a	b						Dapiloato	
Petroleum Products										
VHw6-10	ug/L	15000	15000	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
VPHw	ug/L		1500	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	ug/L	6		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,1-Trichloroethane	ug/L	8000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	ug/L	0.8		ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
1,1,2-Trichloroethane	ug/L	3		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	30	==	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethene	ug/L	14		ND (1)	ND (1)	ND (1)	ND (1) / ND (1)	ND (1)	ND (1)	ND (1) / ND (1)
1,2-Dichlorobenzene	ug/L	200	7	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	5	1000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	ug/L	4.5		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,3-Dichlorobenzene	ug/L		1500	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	ug/L	5	260	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Benzene	ug/L	5	400	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromoform	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon tetrachloride	ug/L	2	130	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chlorobenzene	ug/L	80	13	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroethane	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroform (Trichloromethane)	ug/L	100	20	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloromethane (Methyl chloride)	ug/L			ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
cis-1,2-Dichloroethene	ug/L	8		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dibromochloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Ethylbenzene	ug/L	140	2000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m&p-Xylenes	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methyl tert butyl ether (MTBE)	ug/L	95	34000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methylene chloride	ug/L	50	980	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
o-Xylene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Styrene	ug/L	800	720	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethene	ug/L	30	1100	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Toluene	ug/L	60	5	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
trans-1,2-Dichloroethene	ug/L	80		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichloroethene	ug/L	5	200	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	ug/L	1000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	ug/L	2		ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
Xylenes (total)	ug/L	90	300	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)

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Sample Location: Sample ID: Sample Date:			CSR lule 3.2 FAW	EBA11-1 WG-56484-220919-NT-07 9/22/2019 Duplicate	EBA11-3 WG-56484-300419-CF-05 4/30/2019	EBA11-3 WG-56484-220919-NT-03 9/22/2019	EBA11-4 WG-56484-300419-CF-04 4/30/2019	EBA11-4 WG-56484-220919-NT-04 9/22/2019	HBT94-2 WG-56484-010519-CF-21 5/1/2019	HBT94-2 WG-56484-230919-NT-20 9/23/2019
Parameters	Units	a	b	- Jupilouto						
Petroleum Products										
VHw6-10	ug/L	15000	15000	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
VPHw	ug/L		1500	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	ug/L	6		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,1-Trichloroethane	ug/L	8000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	ug/L	0.8		ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
1,1,2-Trichloroethane	ug/L	3		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	30		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1) / ND (1)
1,1-Dichloroethene	ug/L	14		ND (1) / ND (1)	ND (1)	ND (1) / ND (1)	ND (1)	ND (1)	ND (1)	ND (1) / ND (1)
1,2-Dichlorobenzene	ug/L	200	7	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	5	1000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	ug/L	4.5		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,3-Dichlorobenzene	ug/L		1500	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	ug/L	5	260	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Benzene	ug/L	5	400	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromoform	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon tetrachloride	ug/L	2	130	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chlorobenzene	ug/L	80	13	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroethane	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroform (Trichloromethane)	ug/L	100	20	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloromethane (Methyl chloride)	ug/L			ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
cis-1,2-Dichloroethene	ug/L	8		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dibromochloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Ethylbenzene	ug/L	140	2000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m&p-Xylenes	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methyl tert butyl ether (MTBE)	ug/L	95	34000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methylene chloride	ug/L	50	980	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
o-Xylene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Styrene	ug/L	800	720	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethene	ug/L	30	1100	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Toluene	ug/L	60	5	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
trans-1,2-Dichloroethene	ug/L	80		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichloroethene	ug/L	5	200	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	ug/L	1000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	ug/L	2		ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
Xylenes (total)	ug/L	90	300	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)

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Sample Location: Sample ID: Sample Date:			CSR lule 3.2 FAW	MW01-16 WG-56484-300419-NT-01 4/30/2019	MW01-16 WG-56484-220919-NT-01 9/22/2019	MW02-18 WG-56484-010519-CF-16 5/1/2019	MW02-18 WG-56484-010519-CF-17 5/1/2019 Duplicate	MW02-18 WG-56484-230919-NT-16 9/23/2019	MW02-18 WG-56484-230919-NT-17 9/23/2019 Duplicate
Parameters	Units	а	b						
Petroleum Products									
VHw6-10	ug/L	15000	15000	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
VPHw	ug/L		1500	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane	ug/L	6		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,1-Trichloroethane	ug/L	8000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	ug/L	0.8		ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
1,1,2-Trichloroethane	ug/L	3		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	30		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethene	ug/L	14		ND (1)	ND (1) / ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichlorobenzene	ug/L	200	7	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	5	1000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	ug/L	4.5		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,3-Dichlorobenzene	ug/L		1500	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	ug/L	5	260	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Benzene	ug/L	5	400	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromoform	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon tetrachloride	ug/L	2	130	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chlorobenzene	ug/L	80	13	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroethane	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroform (Trichloromethane)	ug/L	100	20	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloromethane (Methyl chloride)	ug/L			ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
cis-1,2-Dichloroethene	ug/L	8		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L			ND (1)	ND (1)	ND (1)	ND (1)	ND (1) J	ND (1) J
Dibromochloromethane	ug/L	100		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Ethylbenzene	ug/L	140	2000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m&p-Xylenes	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methyl tert butyl ether (MTBE)	ug/L	95	34000	ND (0.5)	ND (0.5)	0.68	0.62	ND (0.5)	ND (0.5)
Methylene chloride	ug/L	50	980	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
o-Xylene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Styrene	ug/L	800	720	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethene	ug/L	30	1100	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Toluene	ug/L	60	5	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
trans-1,2-Dichloroethene	ug/L	80		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	ug/L			ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5) J	ND (0.5) J
Trichloroethene	ug/L	5	200	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	ug/L	1000		ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	ug/L	2		ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
Xylenes (total)	ug/L	90	300	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)	ND (0.75)
,	~∂′ ⊏		500	(0.70)	(5.75)	(3.70)	(5.75)	(3.73)	(5.75)

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Sample Location:				SW-1 WS-56484-010519-	SW-1 WS-56484-010519-	SW-1 WS-56484-230919-	SW-1 WS-56484-191119-	SW03-17 WS-56484-010519-	SW03-17 WS-56484-250619-	SW03-17 WS-56484-230919-	SW03-17 WS-56484-191119-
Sample ID: Sample Date:				CF-01 5/1/2019	CF-02 5/1/2019	NT-01 9/23/2019	NT-01 11/19/2019	CF-03 5/1/2019	CT-01 6/25/2019	NT-02 9/23/2019	NT-02 11/19/2019
Parameters	Units	DW a	WQG FAW LTA b		Duplicate						
Field Parameters	ma/l		_E	E 64	E 64	10.06	10.05	7.56	t oob	1 660	7.4
Dissolved Oxygen, Field ORP, Field	mg/L millivolts		>5 	5.64 274	5.64 274	12.86 330	10.85 158	7.56 243	4.69 ^b 201	6.69 317	7.4 216
pH, Field Specific Conductance, Field	s.u. uS/cm		6.5-9.0	5.51 ^b 36	5.51 ^b 36	6.34 ^b 60	7.85 29	6.07 ^b	8.68 22	6.81 22	7.15 29
Temperature, Field Total dissolved solids, field (TDS)	Deg C	15 AO	-	11.74 0.023	11.74 0.023	9.44 0.039	7.28 0.019	14.13 0.023	23.61 ^a 0.015	13.29 0.014	7.39 0.019
Turbidity, Field	g/L NTU	(c)	(c)	0.023	0.023	0.0	0.4	0.023	9.7	0.6	0.3
General Chemistry											
Alkalinity, bicarbonate Alkalinity, carbonate	mg/L mg/L		-	11.5 ND 0.5	11.3 ND 0.5	29.4 ND 0.5	6.9 ND 0.5	6.6 ND 0.5	7.4 ND 0.5	7.5 ND 0.5	7.0 ND 0.5
Alkalinity, hydroxide	mg/L		-	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5
Alkalinity, total (as CaCO3) Chloride	mg/L mg/L	250 AO	[e] w 150	11.5 ^b 3.42	11.3 ^b 3.42	29.4 ^b 3.93	6.9 3.46	6.6 3.27	7.4 3.54	7.5 3.71	7.0 3.42
Conductivity Fluoride	uS/cm mg/L	 1.5		36.7 ND 0.010	36.3 ND 0.010	77.8 ND 0.010	29.0 ND 0.010	27.9 ND 0.010	29.9 ND 0.010	30.3 ND 0.010	28.7 ND 0.010
Hardness	mg/L		-	12.0	11.9	28.3	8.53	7.75	8.01	8.02	7.97
pH, lab Sulphate	s.u. mg/L	500 AO	6.5-9.0 [b]	7.05 J 0.61	6.99 J 0.61	7.06 J 5.77	7.00 J 0.97	7.00 J 0.90	7.11 J 0.99	6.88 J 1.08	7.03 J 0.94
Total dissolved solids (TDS)	mg/L		-	44	33	77	27	31	37	33	31
Nutrients			f-13	0.0447	0.0450	0.0000	0.0054	ND 0 0005	ND 0 0005	ND 0 0005	0.0000
Ammonia-N Nitrate (as N)	mg/L mg/L	10	[d] 3.0	0.0447 0.0295	0.0450 0.0291	0.0069 0.0108	0.0051 0.0097	ND 0.0025 0.0108	ND 0.0025 ND 0.0025 J	ND 0.0025 ND 0.0025	0.0086 0.0096
Nitrite (as N) Nitrite/Nitrate	mg/L mg/L	1	[c] 	0.0013 0.0308	0.0014 0.0305	ND 0.0005 0.0108	ND 0.0005 0.0097	ND 0.0005 0.0108	ND 0.0005 J ND 0.00255 J	ND 0.0005 ND 0.00255	ND 0.0005 0.0096
Dissolved Metals	ŭ										
Dissolved Metals Aluminum (dissolved)	ug/L		[a]	76.9 ^b	77.2 ^b	78.9 ^b	44.3	40.9 ^b	28.8	17.6	33.2
Antimony (dissolved) Arsenic (dissolved)	ug/L ug/L		-	ND 0.05 0.16	ND 0.05 0.14	ND 0.05 0.27	ND 0.05 0.11	ND 0.05 0.11	ND 0.05 0.12	ND 0.05 0.15	ND 0.05 0.12
Barium (dissolved) Beryllium (dissolved)	ug/L ug/L		-	1.88 ND 0.05	1.93 ND 0.05	3.89 ND 0.05	1.26 ND 0.05	1.29 ND 0.05	1.21 ND 0.05	1.12 ND 0.05	1.29 ND 0.05
Bismuth (dissolved)	ug/L			ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.025
Boron (dissolved) Cadmium (dissolved)	ug/L ug/L		 [b]	ND 5 0.008	ND 5 0.0052	ND 5 0.0104	ND 5 0.0253 J	ND 5 ND 0.0025	ND 5 ND 0.0025	ND 5 ND 0.0025	ND 5 0.0598 ^b
Caesium (dissolved) Calcium (dissolved)	mg/L ug/L		-	ND 0.000005 2830	ND 0.000005 2770	ND 0.000005 6330	ND 0.000005 1980	ND 0.000005 1780	- 1810	ND 0.000005 1760	ND 0.000005 1820
Chromium (dissolved)	ug/L		-	0.18	0.2	0.34	ND 0.05	0.11	ND 0.05	0.1	0.14
Cobalt (dissolved) Copper (dissolved)	ug/L ug/L		-	ND 0.05 0.33	ND 0.05 0.4	0.24 0.53	ND 0.05 0.65	ND 0.05 0.21	ND 0.05 0.22	ND 0.05 0.22	ND 0.05 0.87 J
Iron (dissolved) Lead (dissolved)	ug/L ug/L		-	202 0.104	205 0.102	255 ND 0.025	49 0.054	48 ND 0.025	37 ND 0.025	26 ND 0.025	48 ND 0.025
Lithium (dissolved) Magnesium (dissolved)	ug/L	-	-	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5	ND 0.5
Manganese (dissolved)	ug/L ug/L		-	1210 31	1210 31.1	3040 68.7	871 3.05	803 3.58	846 2.29	884 5.55	835 3.15
Mercury (dissolved) Molybdenum (dissolved)	ug/L ug/L		-	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025	ND 0.0025 ND 0.025
Nickel (dissolved) Phosphorus (dissolved)	ug/L ug/L		-	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25	ND 0.25 ND 25
Potassium (dissolved)	ug/L		-	145	141	736	131	136	135	136 J	121
Rubidium (dissolved) Selenium (dissolved)	mg/L ug/L			0.00020 0.082	0.00021 ND 0.025	0.00057 0.103	ND 0.00010 0.073	ND 0.00010 ND 0.025	- ND 0.025	0.00022 ND 0.025	ND 0.00010 0.051
Silicon (dissolved) Silver (dissolved)	ug/L ug/L			3220 ND 0.005	3180 ND 0.005	6910 ND 0.005	1880 ND 0.005	2490 ND 0.005	2520 ND 0.005	1660 ND 0.005	1820 ND 0.005
Sodium (dissolved)	ug/L			2860	2850	4270	2680	2590	2830	2780	2580
Strontium (dissolved) Sulphur (Dissolved)	ug/L ug/L			11.8 ND 250	11.6 ND 250	23.3 2040	9.09 ND 250	8.06 ND 250	8.72 ND 250	8.32 ND 250	8.51 ND 250
Tellurium (dissolved) Thallium (dissolved)	mg/L ug/L			ND 0.00010 ND 0.005	ND 0.00010 ND 0.005	ND 0.00010 ND 0.005	ND 0.00010 ND 0.005	ND 0.00010 ND 0.005	- ND 0.005	ND 0.00010 ND 0.005	ND 0.00010 ND 0.005
Thorium (dissolved) Tin (dissolved)	ug/L		-	ND 0.05 ND 0.05	ND 0.05 ND 0.05	ND 0.05 ND 0.05	ND 0.05 0.25	ND 0.05 ND 0.05	- ND 0.05	ND 0.05 ND 0.05	ND 0.05 0.43 J
Titanium (dissolved)	ug/L ug/L			2.22	2.37	3.19	0.56	0.4	ND 0.15	ND 0.15	0.33
Tungsten (dissolved) Uranium (dissolved)	mg/L ug/L			ND 0.00005 ND 0.005	ND 0.00005 ND 0.005	ND 0.0005 ND 0.005	ND 0.0005 ND 0.005	ND 0.00005 ND 0.005	- ND 0.005	0.00042 J ND 0.005	ND 0.0005 ND 0.005
Vanadium (dissolved) Zinc (dissolved)	ug/L ug/L			0.77 ND 0.5	0.8 ND 0.5	2.31 1.7	ND 0.25 1.9	ND 0.25 ND 0.5	ND 0.25 ND 0.5	ND 0.25 ND 0.5	ND 0.25 ND 0.5
Zirconium (dissolved)	ug/L			0.067	0.064	ND 0.1	ND 0.1	ND 0.03	ND 0.1	ND 0.1	ND 0.1
Total Metals											
Aluminum Antimony	ug/L ug/L	9500		85.1 ND 0.05	88.2 ND 0.05	122 ND 0.05	45.8 ND 0.05	45.5 ND 0.05	32.2 ND 0.05	22.2 ND 0.05	34 ND 0.05
Arsenic Barium	ug/L	10	 1000 w	0.18	0.15	0.34	0.28	ND 0.05	0.24	0.14	0.13
Beryllium	ug/L ug/L		0.13 w	2.03 ND 0.05	2.21 ND 0.05	4.3 ND 0.05	1.32 ND 0.05	1.35 ND 0.05	1.29 ND 0.05	1.16 ND 0.05	1.39 ND 0.05
Bismuth Boron	ug/L ug/L	5000	1200	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5	ND 0.025 ND 5
Cadmium Caesium	ug/L ug/L	5		0.0071 ND 0.005	0.0098 ND 0.005	0.0139 ND 0.005	0.0052 J ND 0.005	ND 0.0025 ND 0.005	ND 0.0025	ND 0.0025 ND 0.005	0.0467 ND 0.005
Calcium	ug/L		-	2810	2840	6570	2010	1800	1870	1830	1840
Chromium Cobalt	ug/L ug/L		4	0.23 ND 0.05	0.24 0.1	0.44 0.27	0.14 ND 0.05	0.16 ND 0.05	ND 0.05 ND 0.05	0.11 ND 0.05	0.11 ND 0.05
Copper Iron	ug/L ug/L	1000 AO 300 AO	[b] 	ND 0.25 237	ND 0.25 241	0.69 343 ^a	0.61 62	ND 0.25 59	ND 0.25 44	ND 0.25 35	0.51 J 57
Lead	ug/L	10	[b]	0.142	0.144	0.083	0.062	ND 0.025	ND 0.025	ND 0.025	ND 0.025
Lithium Magnesium	ug/L ug/L		-	ND 0.5 1200	ND 0.5 1200	ND 0.5 3010	ND 0.5 894	ND 0.5 802	ND 0.5 855	ND 0.5 873	ND 0.5 873
Manganese Mercury	ug/L ug/L	50 AO 1	[b] [f]	32.5 ND 0.0025	31.9 ND 0.0025	89.1 ^a ND 0.0025	5.23 ND 0.0025	4.36 ND 0.0025	3.42 ND 0.0025	7.42 ND 0.0025	5.3 ND 0.0025
Molybdenum Nickel	ug/L ug/L	250	1000 [b] w	ND 0.025 ND 0.25	ND 0.025 ND 0.25	0.062 ND 0.25	ND 0.025 ND 0.25	ND 0.025 ND 0.25	ND 0.025 ND 0.25	ND 0.025 ND 0.25	ND 0.025 ND 0.25
Phosphorus	ug/L	10 AO for lakes	5	ND 25ab	ND 25ab	ND 25ab	ND 25ab	ND 25ab	ND 25ab	ND 25ab	ND 25ab
Potassium Rubidium	ug/L ug/L			144 0.21	141 0.2	616 0.59	123 0.29	154 ND 0.1	165 -	73 J ND 0.1	122 ND 0.1
Selenium Silicon	ug/L ug/L	10 	2	ND 0.025 3170	0.069 3220	0.096 6530	0.058 1880	ND 0.025 2550	ND 0.025 2560	ND 0.025 1670	ND 0.025 1840
Silver	ug/L	-	[b]	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005
Sodium Strontium	ug/L ug/L		-	2800 11.8	2780 11.9	3980 25.6	2650 8.96	2520 8.11	2720 9.01	2650 9.33	2760 8.62
Sulphur Tellurium	ug/L ug/L			ND 250 ND 0.1	ND 250 ND 0.1	1950 ND 0.1	ND 250 ND 0.1	ND 250 ND 0.1	ND 250	ND 250 ND 0.1	ND 250 ND 0.1
Thallium	ug/L		0.8 w SS	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005
Thorium Tin	ug/L ug/L		-	ND 0.05 ND 0.05	ND 0.05 ND 0.05	ND 0.05 ND 0.05	ND 0.05 0.16	ND 0.05 ND 0.05	- ND 0.05	ND 0.05 ND 0.05	ND 0.05 0.21 J
Titanium Tungsten	ug/L ug/L			3.44 ND 0.05	3.47 ND 0.05	8.06 ND 0.05	1.8 ND 0.05	0.58 ND 0.05	0.31	0.3 ND 0.05 J	0.44 ND 0.05
Uranium	ug/L		8.5 w	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005	ND 0.005
Vanadium Zinc	ug/L ug/L	5000 AO	 [b]	0.91 ND 1.5	0.93 ND 1.5	2.89 ND 1.5	ND 0.25 ND 1.5	ND 0.25 ND 1.5	ND 0.25 ND 1.5	ND 0.25 ND 1.5	ND 0.25 ND 1.5
Zirconium	ug/L		-	ND 0.03	ND 0.03	ND 0.1	ND 0.1	ND 0.03	ND 0.1	ND 0.1	ND 0.1

Table 5.12 Page 1 of 1

Analytical Result Notes 2019 Operations and Monitoring Report Campbell River Waste Management Centre Comox Strathcona Waste Management

Notes:	
ENV	British Columbia Ministry of Environment and Climate Change Strategy
CSR	ENV British Columbia Contaminated Sites Regulation (CSR) Schedule 3.2 Generic Numerical Water Standards (June, 2018)
WQG	ENV British Columbia Approved (March 2018), Working (June 2017) and Source Drinking (December 2017) Water Quality Guidelines (WQG).
	Most stringent guideline is presented unless otherwise indicated.
FAW	Guideline/standard for the protection of freshwater aquatic life.
DW	Guideline/standard for the protection of drinking water.
LTA	Long term average WQG FAW (generally most stringent guideline). WQGs presented are LTA unless otherwise specified.
а	CSR DW
b	CSR FAW
С	WQG DW
d	WQG FAW
W	Working WQG. Provides benchmarks for those substances that have not yet been fully assessed and endorsed by the ENV.
Interim	Interim WQG developed when insufficient data available to meet the minimum requirement of a full guideline.
(*)	Aesthetic objective. Parameters may impair the taste, smell or colour of water or interfere with the supply of good quality water. Parameters do not cause adverse health effects.
ND	Not detected at the associated reporting limit.
J	Estimated concentration.
R	Rejected result
[a]	Limit varies with pH.
[b]	Limit varies with Hardness.
[c]	Limit varies with Chloride (mg/L).
[f]	Limit varies with Methyl Mercury.
	Exceeds indicated standard or guideline
(c)	Background dependant. Comparison to background not complete or background location has not been established.
(i)	Cobalt concentrations in groundwater do not exceed the referenced cobalt interim background groundwater.
	concentration estimate. Standard confirmed in email received from ENV, November 7, 2017.

Dissolved Oxygen, field WQG specific to buried embryo/alevin life stages of aquatic life (most conservative).

Turbidity, field WQG applies to water during clear flows or clear water.

Cadmium, dissolved

Copper, total

Lead, total

Zinc, total

WQG LTA applies to water hardnesses between 3.4 and 285 mg/L CaCO3.

WQG LTA applies to water hardnesses between 50 and 250 mg/L CaCO3.

WQG LTA and STM apply to water hardnesses between 8 and 360 mg/L CaCO3.

WQG LTA applies to water hardnesses between 90 and 330 mg/L CaCO3.

Appendices **GHD** | 2019 Operations and Monitoring Report | 056484 (48)

Appendix A Operational Certificate MR-02401



MINISTRY OF WATER, LAND AND AIR PROTECTION

Vancouver Island Region Environmental Protection 2080-A Lableux Road Nanaimo, British Columbia Vario 6J9 Telephone: (250) 751-3100 Fax: (250) 751-3103

OPERATIONAL CERTIFICATE

MR-02401

Under the Provisions of the Waste Management Act

Regional District of Comox-Strathcona 600 Comox Road

Courtenay, British Columbia

V9N 3P6

is authorised to manage waste and recyclable material from the Regional District of Comox-Strathcona and environs at the Campbell River landfill located on Argonaut Road, Campbell River, British Columbia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Waste Management Act* and may result in prosecution.

1. MANAGEMENT OF WASTE AND RECYCLABLE MATERIAL

1.1. Sanitary Landfill

- 1.1.1. This subsection applies to the discharge of waste to a sanitary landfill.
- 1.1.2. Waste may be discharged to the sanitary landfill shown on attached Site Plan A.
- 1.1.3. The characteristics of the discharge must be municipal solid waste as defined under the *Waste Management Act* and other wastes as approved in writing by the Regional Waste Manager.
- 1.1.4. The authorised works are a sanitary landfill, and related appurtenances approximately located as shown on attached Site Plan A.
- 1.1.5. The authorised works must be complete and in operation on and from the date of this operational certificate.

1.2. Leachate

- 1.2.1. This subsection applies to leachate from the landfill.
- 1.2.2. The characteristics of the leachate must not exceed concentrations set in the British Columbia Approved Water Quality Guidelines (Criteria) and A Compendium of Working Water Quality Guidelines for British Columbia at the property boundary. Where natural background water quality concentrations

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exceed the aforementioned guidelines, characteristics of the leachate must not exceed background concentrations.

1.3. Entrance facilities

- 1.3.1. The authorised facilities are signs, weigh scales, recyclable material and waste drop-off and storage facilities and related appurtenances.
- 1.3.2. The authorised facilities must be complete and in operation on and from the date of this operational certificate.

1.4. Location of Authorised Facilities

The location of the facilities for the management of waste and recyclable material to which this operational certificate is applicable is Block C of District Lot 85, Sayward Land District, approximately located as shown on attached Site Plan A.

2. GENERAL REQUIREMENTS

2.1. Qualified Professionals

All facilities and information, including works, plans, assessments, investigations, surveys, programs and reports, must be certified by qualified professionals.

2.2. Plans

- 2.2.1. Site development, operating, leachate management, closure and post closure plans must be submitted to the Regional Waste Manager by December 31, 2003.
- 2.2.2. The plans referenced in subsection 2.2.1 must address, but not be limited to, each of the subsections in the *Landfill Criteria for Municipal Solid Waste* including performance, siting, design, operational and closure and post-closure criteria.
- 2.2.3. The facilities must be developed, operated and closed in accordance with the plans referenced in subsection 2.2.1.

2.3. Bear-Proof Facilities

- 2.3.1. Bears must not access putrescible waste at the landfill facility. All putrescible waste that arrives at the landfill facility must be immediately contained within a bear-proof bin or an area enclosed by a bear-proof electric fence. Grass, leaves, weeds, branches and woodwaste are exempt from bear-proofing requirements.
- 2.3.2. A bear-proof electric fence must be installed around the landfill facilities.

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- 2.3.3. The bear-proof fence must be designed, constructed, operated and maintained to prevent bears from penetrating the fence.
- 2.3.4. The bear-proof electric fence and bear-proof bins must be installed and in operation by March 30, 2004.

2.4. Landfill Gas

- 2.4.1. When 100,000 tonnes of waste have been discharged at the landfill, an assessment of the potential for landfill gas generation must be submitted to the Regional Waste Manager.
- 2.4.2. The landfill gas assessment must address, but is not limited to, subsections 4.2 and 6.4 of the Landfill Criteria for Municipal Solid Waste and section 6 of the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills.
- 2.4.3. The potential for landfill gas generation is to be re-assessed at least once every 5 years after the initial assessment.

2.5. Seismic and Fault Activity

A report that assesses the risk from seismic and fault activity must be submitted to the Regional Waste Manager by December 31, 2003.

2.6. Additional Facilities or Works

The Regional Waste Manager may require investigations, surveys, and the construction of additional facilities or works including, but not limited to, additional leachate and landfill gas management facilities. The Regional Waste Manager may also amend the requirements of any of the information required by this operational certificate including plans, programs, assessments and reports.

3. MONITORING AND REPORTING

3.1. Monitoring Program

- 3.1.1. A monitoring program must be developed to identify any impacts to the environment and public health from the landfill.
- 3.1.2. The monitoring program must address, but not be limited to, subsections 4.1, 4.2 and 7.15 of the Landfill Criteria for Municipal Solid Waste and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills.
- 3.1.3. Monitoring must be conducted in accordance with the monitoring program.

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Date Issued: Date Amended: (most recent) Page: 3 of 4 B. W. Medlar
Assistant Regional Waste Manager

OPERATIONAL CERTIFICATE; MR-02401

3.2. Annual Operating and Monitoring Report

- 3.2.1. An annual operating and monitoring report for the preceding 12 month period from January 1 to December 31 must be submitted to the Regional Waste Manager by April 30 of each year.
- 3.2.2. The report must include:
 - An executive summary;
 - Tonnage of each type of waste discharged to the landfill for the year;
 - · Remaining site life and capacity;
 - Review of the preceding year of operation, plans for the next year and any new information or proposed changes relating to the facilities and plans;
 - Comparison of the monitoring data with the performance criteria in section 4 of the Landfill Criteria for Municipal Solid Waste and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills, interpretation of the monitoring data, identification and interpretation of irregularities and trends, recommendations, and any proposed changes to the monitoring program.

4. SITE CLOSURE

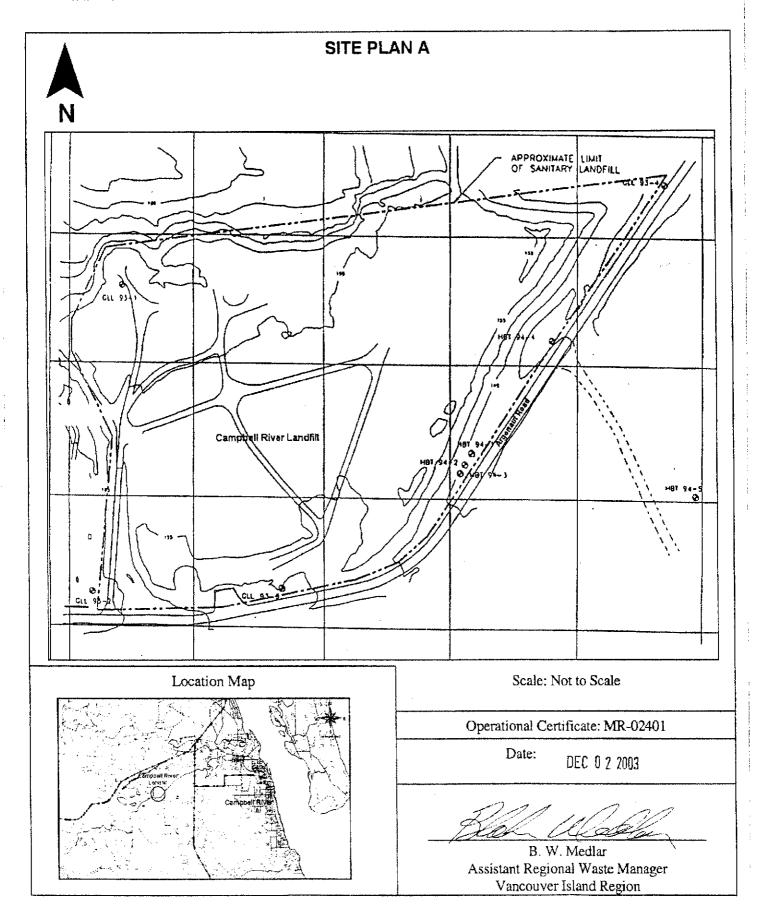
4.1. Closure and Post-Closure Fund

A closure and post-closure financial security trust fund must be built up over time. The closure and post-closure fund must ultimately meet or exceed the estimated closure and post-closure costs plus a reasonable contingency for any remediation that may be required.

DEC 0 2 2003

Date Issued: Date Amended: (most recent) Page: 4 of 4 B. W. Medlar Assistant Regional Waste Manager

OPERATIONAL CERTIFICATE; MR-02401



Appendix B CVRD Response Letter April 18, 2019 600 Comox Road, Courtenay, BC V9N 3P6 Tel: 250-334-6000 Fax: 250-334-4358 Toll free: 1-800-331-6007

www.comoxvalleyrd.ca



File: 5380-20/CR

April 18, 2019

Sent via email only: environmentalcompliance@gov.bc.ca
Travis.Kurinka@gov.bc.ca

Travis Kurinka BC Ministry of Environment & Climate Change Strategy 525 Superior Street Victoria BC V8V 1T7

Dear Mr. Kurinka:

Re: Campbell River Waste Management Center – Warning Letter, Landfill Gas

Management Regulation, Registration Number LG115164 – Reference No. OC 2401 –

Comox Valley Regional District

The Comox Strathcona Waste Management (CSWM), a function of the Comox Valley Regional District (CVRD), has prepared this letter in response to the Ministry of Environment and Climate Change Strategy's (MoE) warning letter dated March 21, 2019, titled Campbell River Waste Management Center, Landfill Gas Management Regulation, registration number LG115164.

As stated in the March 21, 2019 letter, on January 22, 2019, MoE had conducted a site inspection at the Campbell River Waste Management Centre, located at 6700 Argonaut Road, Campbell River BC (Site), and noted a number of actions which are required to address identified non-compliance sections of the Landfill Gas Management Regulation. The CVRD has prepared this letter to inform MoE of the actions taken to date, and the planned future actions to prevent further similar non-compliances.

Response to MoE Inspection

A summary of the items requiring attention from MoE's inspection, and a brief explanation of the CVRD's responses, have been presented in the attached Table 1 (Enclosure). The paragraphs below provide more detailed explanations to supplement the responses provided in Table 1.

The CVRD's consultant, GHD Limited (GHD), prepared the 2017 Design, Operations, and Closure Plan (2017 DOCP) with the overall objective of optimizing the remaining available airspace to bring the landfill to closure. Final closure of the landfill is scheduled to be completed at the end of 2023. A detail design of the closure work is scheduled to commence in 2020.

The 2017 DOCP also included the Draft - Updated Landfill Gas Management Facilities Plan (2017 LFG Plan) (GHD, 2017), which is designed to align with the updated final contours in the 2017 DOCP. Prior to submitting the 2017 DOCP, the CVRD and GHD met with MoE on June 15, 2017 to present the proposed timeline to implement landfill gas (LFG) collection at the Site and to reach landfill closure, as provided in the 2017 DOCP. The June 15, 2017 presentation to MoE also

reviewed the CVRD's financial investments in other solid waste management infrastructure and development initiatives throughout the districts.

The 2017 DOCP was submitted to MoE on March 2, 2018 with an application for a minor amendment to the Site's Operational Certificate. On October 29, 2018, MoE, the CVRD, and GHD participated in a pre-application conference call for the Operational Certificate minor amendment application. MoE notified the CVRD and GHD that a separate application is required for a substituted requirement under the Landfill Gas Management Regulation (LFG Regulation) to approve the proposed timing of LFG collection at the Site. On November 27, 2018, MoE, the CVRD, and GHD participated in a conference call meeting to discuss the substituted requirement application process. The 2017 LFG Plan was submitted to MoE on March 2, 2018 with the 2017 DOCP submission. The application for the substitution under the LFG Regulation was submitted to MoE on March 19, 2019.

The CVRD is seeking a substituted requirement under the LFG Regulation to replace the current accepted 2013 Landfill Gas Management Facilities Design Plan for the Campbell River Waste Management Centre, SCS Engineers, February 2013 (2013 LFG Plan) with the 2017 LFG Plan. The 2017 LFG Plan supersedes the 2013 LFG Plan with a simplified single header design and more efficient collection field. The application for a substituted requirement also requests approval of a substituted schedule to complete detailed design of the LFG collection system and landfill closure in 2020 and to construct the LFG collection system in 2022 to 2023 in concurrence with the final cover construction for the landfill.

Constructing the LFG collection system at the time of placing final geomembrane cover brings efficiencies to the construction and the design and operation of the system and provides for meeting the collection requirements of the LFG Regulation. The landfill at the Site operates as a natural attenuation landfill, with no bottom liner system. As such, the appropriate final cover design includes a geomembrane with a protective cover soil layer. The installation of the geomembrane final cover system is scheduled to occur in 2022 to 2023. The vertical gas wells are best installed at the time of constructing the geomembrane cover system to achieve the highest quality installation. The geomembrane final cover will result in a higher quality gas collected by the LFG collection system, by reducing oxygen and atmospheric inputs. By collecting a higher quality gas, the collection efficiency of the LFG collection system will increase. Based on this rationale, reaching the 75 per cent collection efficiency target, as required by the LFG Regulation, will more likely be met.

The public consultation process required by Section 20 of the LFG Regulation in support of the LFG substitution application is currently underway. As required by Section 20 (2) of the LFG Regulation, a billboard was posted at the Site entrance on April 2, 2019 and notices were published in the Campbell River Mirror on April 3, 2019 and April 5, 2019. The CVRD also held an open house on April 2, 2019 to educate the public on the LFG Regulation substitution application within the context of the overall closure strategy for the landfill at the Site. The open house included information regarding the final cover design and current and future planned environmental monitoring program.

Upon approval of the LFG substitution application, the CVRD will undertake the detailed design of the LFG collection system and landfill closure in 2020. Construction of the geomembrane final cover system and LFG collection system is scheduled for 2022 to 2023, which is concurrent with the

closure of the landfill at the Site. LFG collection at the Site is scheduled to commence in the fourth quarter of 2022.

Closing Remarks

The CVRD appreciates the opportunity to provide this response to MoE. Should you have any questions or require any further clarifications, please do not hesitate to contact the undersigned.

Sincerely,

M. Rutten

Marc Rutten, P.Eng. General Manager of Engineering Services

Enclosure

cc: Andrew McGifford, Senior Manager of CSWM Services

Table 1 Page 1 of 1

Responses to ENV Inspection Campbell River Waste Management Centre Comox Valley Regional District

LFG Reg Section 7 (2)(b):	Requirement Description: The plan required under this section must be prepared by a qualified professional in accordance with the guidelines and include the following information: (b) a plan for the installation, operation and maintenance of landfill gas management facilities at the landfill site, including a contingency plan for disruption in landfill gas management for scheduled or emergency maintenance or replacement of	ENV Details/Findings: The updated landfill gas management facilities design plan in the 2017 DOCP provided a plan for the installation, operation and maintenance of landfill gas management facilities at the CVRD landfill. However, the 2017 DOCP does not include a contingency plan for disruption in landfill gas management for scheduled or emercency maintenance or replacement of landfill gas management.	CVRD/GHD Response: The CVRD's consultant, GHD Limited, will revise the Draft - Updated Landfill Gas Management Facilities Design Plan dated June 13, 2017 (2017 LFG Plan) to include a contingency plan for distruptions in LFG collection due to scheduled or emergency maintenance, or replacement of LFG management facilities. The revised LFG Plan will be submitted to ENV by July 2019.
7 (3):	landfill gas management facilities; The landfill gas management facilities design plan must be submitted to the director no later than one year after the date the report setting out the estimate was required to be submitted to the director.	facilities in Appendix G section 4.	Updates to the landfill gas design plan were completed in June 2017. The CVRD issued the RFP for updating the DOCP and updated landfill gas design plan in August 2016 to plan to allow for utilization of remaining landfil
8 (2)(a):	The owner or operator of a landfill site for which there is an accepted design plan must (a) install landfill gas management facilities in accordance with the accepted design plan, and	The CVRD submitted their 2013 LFGMF Design Plan Report to the Ministry on February 25, 2013 and became an approved document by a Director and an accepted design plan on April 26, 2013. The 2013 LFGMR Design Plan Report recommended that landfill gas management facilities be installed as the landfill gas production was assessed to be over the 1,000 tonnes/year limit. In their 2017 DOCP, the CVRD conducted an update to their landfill gas management facilities design	The detail design of the gas collection and flare system is scheduled to commence in 2020 with installation occurring in 2022 to 2023 as part of the final cover/closure works for the landfill as presented to the ENV in June 2017. A meeting with ENV to review the process for applying for substituted requirements was held on Novemeber 27, 2018. An application for substituted requirements of the LFG Regulation was made on March 19, 2019. Public consultation on the substituted requirements application is currently being
		plan. The 2017 DOCP was currently in review at the time of inspection and has not been accepted by the Ministry.	completed. See the attached detailed response.
		During the inspection, Mr. McGifford informed Officer Kurinka that no landfill gas management facilities had been installed at the time of the inspection. Mr. McGifford informed Officer Kurinka that the CVRD is currently working towards submitting a substitution request to delay the installation of the landfill gas management facilities until after the closure of the landfill which is estimated to be closed in 2023.	
		Therefore, the CVRD has been found to be out of compliance with this section for not installing landfill gas management facilities in accordance with their 2013 accepted design plan.	
8 (2)(b)(i):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any guidelines respecting (i) migration of landfill gas,	At the time of the inspection, the CVRD did not have a landfill gas management system installed and had not implemented management practices processes and methods for landfill gas management in accordance with any guidelines respecting migration of landfill gas.	The landfill gas monitoring system will be installed at the time of the placement of low permeable geomembrane cover which eliminates the venting through the intermediate sandy cover soils and creates the potential for subsurface migration.
8 (2)(b)(ii):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any guidelines respecting (ii) use of landfill covers,	At the time of the inspection, the CVRD did not have a landfill gas management system installed and had not implemented management practices processes and methods for landfill gas management in accordance with any guidelines respecting use of landfill covers. The CVRD was applying daily and intermediate cover to the landfill during the inspection to meet requirements specified in their refuse permit PR2401.	Outside of the active discharge area, the landfill footprint is secured with a thick intermediate cover of sandy soils. The low permeable geomembrane cover system is planned for installation in 2022 to 2023 once the landfill reaches capacity.
8 (2)(b)(iii):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any guidelines respecting (iii) operation of landfill gas management facilities,		As noted above, the LFG collection system is scheduled to be installed in 2022 to 2023.
8 (2)(b)(iv):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any guidelines respecting (iv) landfill gas collection equipment,	At the time of the inspection, the CVRD did not have a landfill gas management system installed and had not implemented management practices processes and methods for landfill gas management in accordance with any guidelines respecting landfill gas collection equipment.	As noted above, the LFG collection system is scheduled to be installed in 2022 to 2023.
8 (2)(b)(v):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any quidelines respecting (v) landfill gas flarine equipment, and	At the time of the inspection, the CVRD did not have a landfill gas management system installed and had not implemented management practices processes and methods for landfill gas management in accordance with any quidelines respecting landfill gas flaring equipment.	As noted above, the LFG collection system is scheduled to be installed in 2022 to 2023.
8 (2)(b)(vi):	The owner or operator of a landfill site for which there is an accepted design plan must (b) implement management practices, processes and methods for landfill gas management in accordance with any guidelines respecting (vi) landfill gas management facilities maintenance, including the number of days annually that landfill gas management facilities may be shut down.		As noted above, the LFG collection system is scheduled to be installed in 2022 to 2023.
8 (3):		I Mr. McGifford informed Officer Kurinka during the inspection that no landfill gas management facilities have been installed at the landfill. The currently accepted landfill gas management facilities design plan was submitted to the Director on February 25, 2013, which required the CVRD to install the landfill gas management facilities no later than February 25, 2017.	As noted above, the CVRD has applied for a substituted requirement under the LFG Regulation which allows for the utilization of the remaining landifl capacity.
14 (3)(a):	An annual report required under this section must be submitted to the director (a) if an operational certificate or permit has been issued for the landfill site, and the operational certificate or permit for the landfill site specifies a date for submission of an annual report, on or before that date.	Under their Operational Certificate #2401, the CVRD is required to submit an annual report no later	ENV granted an extension the CVRD to submit the 2017 Operations and Monitoring Report on May 7, 2018. The extension was granted by ENV via email dated April 30, 2018.

Appendix C Borehole Logs

GRAPHICS, SYMBOLS AND ABBREVIATIONS ON LOGS

SAMPLE TYPES and TESTS

Ē	SS	Split Spoon Sample
8	SN	Non-Standard Split Spoon Sample
I	ST	Shelby Tube Sample .
		(unconfined compression or unconsolidated undrained test)
II	DS	Denision Type Sample
0	PS	Piston Type Sample
Ξ	CS	Continuous Sample
$\underline{ {\tt V}}$	GS	Grab Sample
<u>s</u>	WS	Wash Sample
<u>K</u>	BQ	BQ Core Sample
\mathbb{Z}	HQ	HQ Core Sample
Z	NQ	NQ Core Sample
7	DT	Dynamic Penetration Test

PENETRATION RESISTANCES

Standard Penetration Resistance(N Value)

Field Vane Test (undisturbed) Field Vane Test (remoulded)

The number of blows by a 63.6 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split spoon sampler for a distance of 300 mm (12 in.).

ABBREVIATIONS

DTPL: Drier Than Plastic Limit
APL: About Plastic Limit
WTPL: Wetter Than Plasic Limit
K: Hydraulic Conductivity (m/s)
Cu: Undrained Shear Strength (kPa)
% REC: Percentage of Sample Recovered
% RQD: Indirect Measure of the Number of
Fractures and Soundness of Rock Mass
Approximate Water Table

GRAIN SIZE CLASSIFICATION %

trace, "eg. trace sand" some, "eg. some sand" adjective, "eg. sandy" and, "eg. and sand"	1 - 10 10 - 20 20 - 35 35 - 50
noun, "eg. sand"	>50

Note: Classification Divisions Based on Modified M.I.T. Grain Size Scale

SOIL DESCRIPTIONS

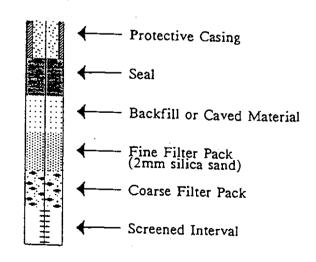
Cohesionless Soils

Relative Density	N	Va	lue
Very loose Loose	0 4	to	
Compact	10	to to	
Dense Very Dense	30	to ver	

Cohesive Soils

Consistency	$C_{\mathbf{u}}(kPa)$	N Value
Very soft	0 to 12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	over 200	over 30

MONITOR DETAILS



BOREHOLE LOG

PROJECT: 92-746

BOREHOLE: 1 1 of 2

CAMPBELL RIVER SANITARY LANDFILL

CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 1 1 of 2

DATE: 11 January 1993

GEOLOGIST SRB

ELEVATION 154.0 m ASL

	된	-	D			SAI	MPL	E			
DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS L NUMBER	NUMBER	INTERVAL	1 21	WATER	REC	RQD	N VALUE	WATER CONTENT (%)
	S	SAND		₹	1.!	1	×	×	×	15 30 45 60	10 20 30 40
1		Medium brown fine to medium sand, trace silt, moist, loose.			XXX	S					
2					X				-		
3					X		ļ				
4									-		
6.1 6				-	XXX				-		
7		SAND AND GRAVEL Medium brown fine to medium sand, trace silt, trace fine to medium subrounded gravel, moist, loose.			X X X	S			-		
8		median subrounded gravel, moist, 100se.			ΧG	S					
9					X						
10 -				-	X				-		
11					X X X	s					
12		•			X				-		
13.1 13		SAND Medium brown fine to medium sand, trace silt, trace			Λ X X	s					
14.6		fine to medium subrounded gravel, moist, compact. SAND AND GRAVEL			X X X G	s			,		
16		Medium brown fine to medium sand, some fine to medium subrounded gravel, moist, compact.			X				-		
17		- Medium brown fine to medium sand and fine to coarse gravel with cobbles from 16.5 m to 17.1 m.		-	XXX	ł					
18					X G	S					
19					X						
	•		7	į	X						

BOREHOLE LOG

PROJECT: 92-746

BOREHOLE: 1 2 of 2

CAMPBELL RIVER SANITARY LANDFILL

CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 1 2 of 2

DATE: 11 January 1993

GEOLOGIST SRB
ELEVATION 154.0 m ASL

ł	₹						DT -				
DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	NUMBER	TYPE	N VALUE WY	% WATER T	% REC	% RQD	N VALUE	WATER CONTENT (%)
					4					15 30 45 60	10 20 30 40
21					X Gs				7		
22		•			$\langle \rangle$						
23				-	X X						
24					X						
24.8		Saturated at 24.80 m.	<u> </u>		X Cs						
25 -		SAND	1:: \(\frac{1}{2}\):	- [GS				-		
26		Medium brown fine to medium sand and fine to medium subrounded gravel, moist, compact.	: <u>#</u> :		X						
		g. a.c., moist, compact.			8						
27				}	\langle				4		
28.0		Borehole sands cave from 28.00 m to 27.17 m.									
		Borehole terminated at 28.00 m.									
ļ		•									
							:				
ļ								,			

BOREHOLE LOG

PROJECT: 92-746

BOREHOLE: 2 1 of 2

CAMPBELL RIVER SANITARY LANDFILL

CAMPBELL RIVER, BRITISH COLUMBIA

FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 2 1 of 2

DATE: 12 January 1993

GEOLOGIST SRB

ELEVATION 165.9 m ASL

	>													9 m ASL		
EPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	NUMBER	INTERUAL	TYPE	N VALUE	WATER	REC	RGD			LUE	CONT	6) ·	
	₹. .	SAND AND GRAVEL		Z	_1.t	1	Z	×	×	×	15	30 4	5 60	10 20	30 40	
1 -		Medium brown fine to medium sand, trace silt and fine subrounded gravel, moist, loose.			XXX	GŠ										
2 -					XXX					-						
3 ·					XXX					-						
5 -				_	XXX	GS				. =						
7					XXXX					-						
8					XXX					-						
9					XXX											
11					XXX					-						
12					XXXX	GS:										
13					XXX											
15.2 15 -		SAND		-	XXXX	GS				-						
16		Medium brown fine to medium sand, trace silt, a few fine pieces of gravel, moist, loose.			XXX	-						***************************************				
18		Gravel leaves at 10 00		****	XXX						1					
19		- Gravel layer at 18.30 m to 18.50 m.		******	XXX	•										

BOREHOLE LOG

PROJECT: 92-746

BOREHOLE: 2 2 of 2

CAMPBELL RIVER SANITARY LANDFILL

CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 2 2 of 2

DATE: 12 January 1993

GEOLOGIST SRB
ELEVATION 165.9 m ASL

	PHY					S	AM	PLI	<u> </u>			···		J.M. ASC	
DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	NUMBER	THTERUAL	TYPE	VALUE	WATER	REC	אמם		VAL		WATER CONTEN (%)	
	:::		 	Į <u>z</u>	ļ,	-	Z	×	*	×	15	30 45	60	10 20 30 4	0
21 -					XXX					-					
22 -					X			·		-					
23 -					X					-					
24 -					X					-					
25 - 26 -				-	XXX					-					
27 -				نهئية بالمقامة المهاد	XXX	İ				-					
28 -		- Gravel layer at 27.40 m to 28.00 m.		لمستحدد	X					_					
29 -					X					_					
30.3 30 ~				-	X		:			_					
31 -		SAND AND SILT Medium brown fine sand and silt, saturated, dense.		******	XXX	GS				-					
32 -				1	XX					-					
33 -					XXX										
34 - 35.3 ³⁵ -		Saturated at 33.75 m.			XXX					-					
33.3	1114	Borehole terminated at 35.33 m below ground.	- ∷≢:	‡	X					-					
· .		ar 35.33 in Below ground.										***************************************			
;															

BOREHOLE LOG PROJECT: 92-746 BOREHOLE: 3 1 of 2

CAMPBELL RIVER SANITARY LANDFILL
CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 3 1 of 2

DATE: 14 January 1993
GEOLOGIST SRB
ELEVATION 153.6 m ASL

DEPTH OF STRATIGRAPHIC DESCRIPTION OF STRATIG	>	ξŢ			Τ	SAMPLE								o in ASL	
SAND AND GRAVEL 2 SAND AND GRAVEL Grey fine to medium silty and fill with some fine subrounded gravel, moist, loose. SAND AND GRAVEL Grey to dark brown fine to medium silty sand with refuse to 4.6 m, moist, loose. 5 Dark brown fine to medium sand, some fine to medium gravel, trace silt, moist. 8 Dark brown fine to medium sand and fine to coarse gravel, moist, dense. SAND AND GRAVEL 10 Dark brown fine to medium sand and fine to coarse gravel, moist, dense. SAND AND GRAVEL 11 Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense.	EPTH	TRATIGRAP	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	UMBER	NTERUAL	·	UALUE	WATER	REC	,			WATER CONTEN (%)	
Grey fine to medium silty sand fill with some fine subrounded gravel, moist, loose. 2	 ⊗	ა 888	SAND AND CRAUPT PRY	Thesenson	JZ	Ц	⊥	Z	×	×	×	15 :	30 45 60	10 20 30 40	
Grey to dark brown fine to medium silky sand with refuse to 4.6 m, moist, loose. SAND Dark brown fine to medium sand, some fine to medium gravel, trace silt, moist. SAND AND GRAVEL Dark brown fine to medium sand and fine to coarse gravel, moist, dense. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense.			Grey fine to medium silty sand fill with some fine subrounded gravel, moist, loose. SAND AND GRAVEL								-				
SAND Dark brown fine to medium sand, some fine to medium gravel, trace silt, moist. SAND AND GRAVEL Dark brown fine to medium sand and fine to coarse gravel, moist, dense. SAND Dark brown fine to medium sand, moist. SAND Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense.	- A		Grey to dark brown fine to medium silty sand with		************						-				
SAND Dark brown fine to medium sand, some fine to medium gravel, trace silt, moist. 8 9.1 9 SAND AND GRAVEL Dark brown fine to medium sand and fine to coarse gravel, moist, dense. 11 12.2 12 13 Dark brown fine to medium sand, moist. SAND Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense. 15 16 17	4 - S										-				
SAND AND GRAVEL Dark brown fine to medium sand and fine to coarse gravel, moist, dense. 11 12.2 12 13 SAND Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense. 15 16 17			Dark brown fine to medium sand, some fine to								-				
SAND AND GRAVEL Dark brown fine to medium sand and fine to coarse gravel, moist, dense. 11 12.2 12 12.5 SAND Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense. 15 16 17	.,		C =,, motes.		**********										
12.2 12 12.5 SAND Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense. 15 16 17	10		Dark brown fine to medium sand and fine to coarse								-				
Dark brown fine to medium sand, moist. SAND AND GRAVEL Alternating layers of medium brown, fine to medium sand and fine to coarse gravel and cobbles, moist, dense.	2.2 12														
sand and fine to coarse gravel and cobbles, moist, dense.			Dark brown fine to medium sand, moist. SAND AND GRAVEL	7											
17			sand and fine to coarse gravel and cobbles, moist,												
	16														
	•														
	6											1			

BOREHOLE LOG PROJECT: 92-746 BOREHOLE: 3 2 of 2

CAMPBELL RIVER SANITARY LANDFILL
CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 3 2 of 2

DATE: 14 January 1993
GEOLOGIST SRB
ELEVATION 153.6 m ASL

	<u> </u>										ION	155.0	J 411 .	73L
DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS 1. NUMBER	NUMBER	INTERVAL	TYPE	N VALUE WY	% WATER T	% REC	% RQO		ALUE	CO	ATER NTEN (%)
		**************************************			$\dag \uparrow$						13 30	10 00	10	20 30 40
21 22 23 24 25 26 27.0 27 28 29 30		SAND Dark brown to grey fine to medium sand, trace silt, saturated, compact.								-				
31 31.8			T.							-				
		Borehole terminated at 31.80 m in sand.		-	$\dagger \dagger$				 	 			╂	
		Stratigraphy logged from auger cuttings.												

BOREHOLE LOG

PROJECT: 92-746

BOREHOLE: 4 1 of 1

CAMPBELL RIVER SANITARY LANDFILL

CAMPBELL RIVER, BRITISH COLUMBIA
FOR: DISTRICT OF CAMPBELL RIVER

BOREHOLE: 4 1 of 1

DATE: 14 January 1993

GEOLOGIST SRB

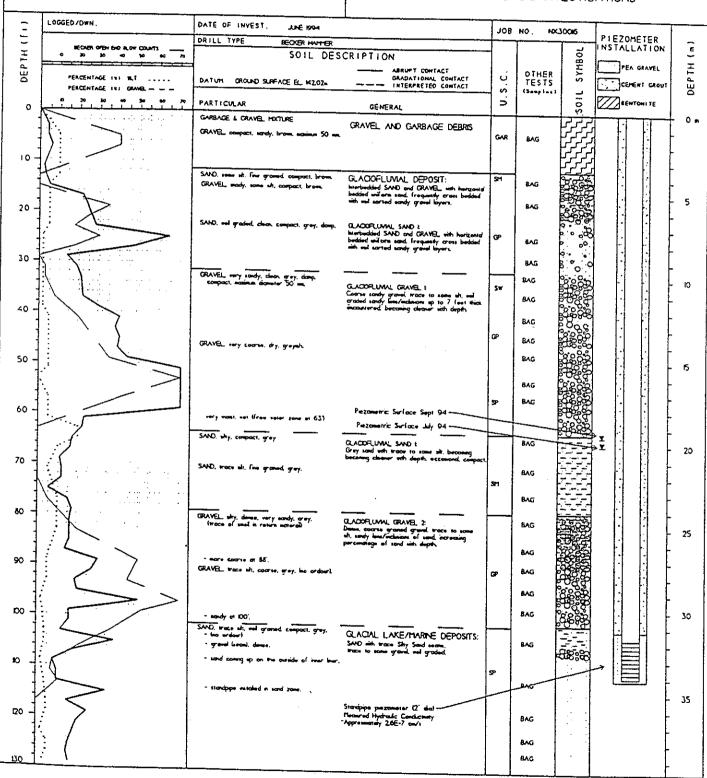
ELEVATION 146.4 m ASL

DEPTH STRATIGRAPHIC DESCRIPTION SAMD SAMD		احرا		, _	-							NOI	140.	m ASL
SAND Medium brown fine to medium sand, trace silt, moist, loose to compact. GS X X X X X X X X X		王		~	L		S	ΑM	PLI	3				
SAND Medium brown fine to medium sand, trace silt, moist, loose to compact. GS X X X X X X X X X	1	тваттавы	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	UMBER	NTERVAL		UALUE	WATER	REC				CONTENT (%)
Madium brown fine to medium sand, trace silt, moist, loose to compact. 2 -		100	CAMP		z	_1.1	•	Z	×	×	*	15 9	0 45 60	10 20 30 40
3 - 4 - 5 - 6 - 7 - 8 - 7 - 8 - 7 - 8 - 7 - 7 - 8 - 7 - 7	1		Medium brown fine to medium sand, trace silt, moist		-	XXX	GS							
4 -						XXX					<u>-</u>			
5 - 6 1 7 7 8 8 1 9 10 - 11 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1					_	XXX		:						
7 - 8 8 9 10 - 11 11 12 12 13 14 15 16 16 17 18 18 17 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	5 -				-	X					-			
9 10 -	6				-	XXX		•			-			
9 10 -					-	XXX					_			
11					-	XX					-			
13 - 14 - 15 - 16 - 17 - Saturated at 17.1 m. Changes to grey in colour below 17.5 m.	10 -					XXX	GS ·				_			
13	11				_	XXX								
16			•			XXX	GS				-			
Saturated at 17.1 m. Changes to grey in colour below 17.5 m. X X X X GS			,								-			
Saturated at 17.1 m. Changes to grey in colour below 17.5 m. X X X GS	15 -					X					-			
	16													
						XXX	Ce.							
							33							
Solution terminated at 19.4 m in sand.		-	Borehole terminated at 10 4	·::†·	Ι_							1		
	<u></u>		Bottehole terminated at 19.4 m in sand.				_					T		



LOG OF BOREHOLE NO. HBT 94-1

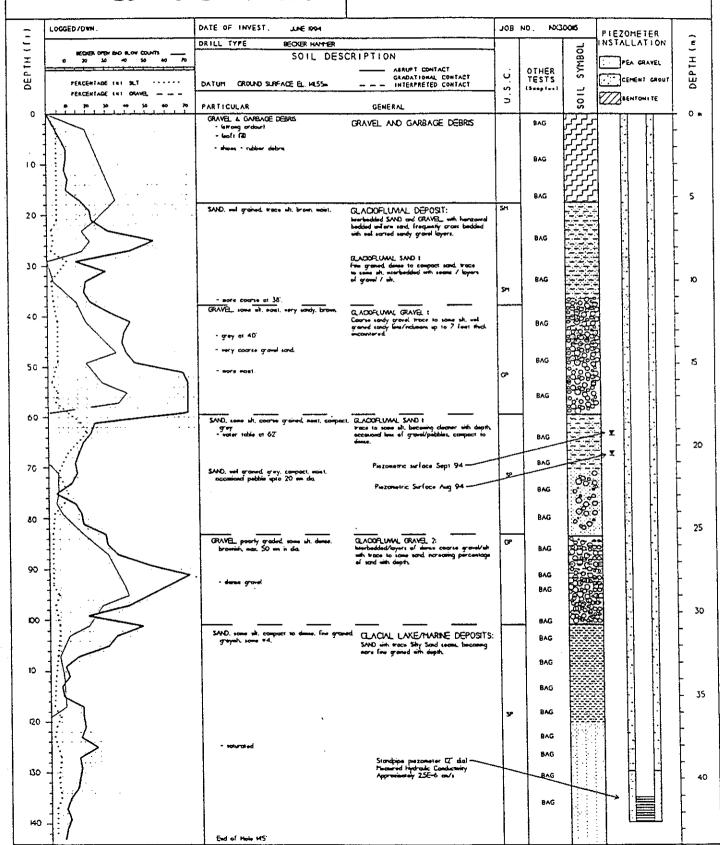
DISTRICT OF CAMPBELL RIVER LANDFILL. ARGONAUT ROAD 1994 HYDROGEOLOGIC INVESTIGATIONS





LOG OF BOREHOLE NO. HET 94-2

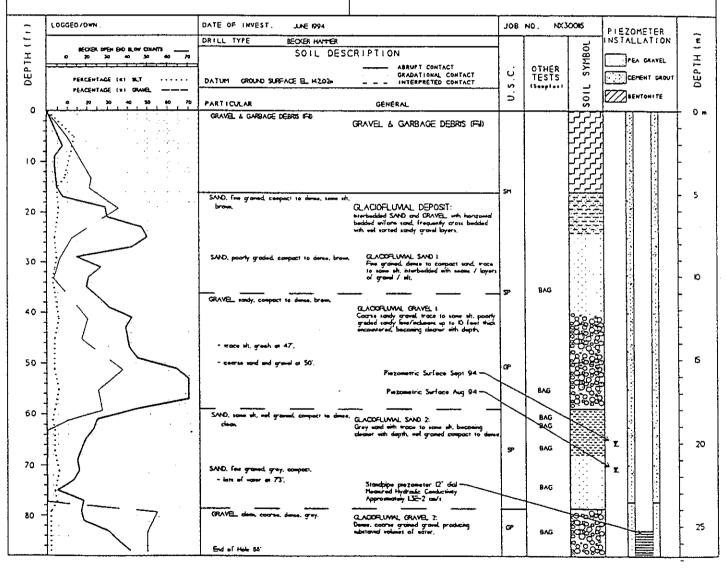
DISTRICT OF CAMPBELL RIVER LANDFILL. ARGONAUT ROAD 1994 HYDROGEOLOGIC INVESTIGATIONS





LOG OF BOREHOLE NO. HBT 94-3

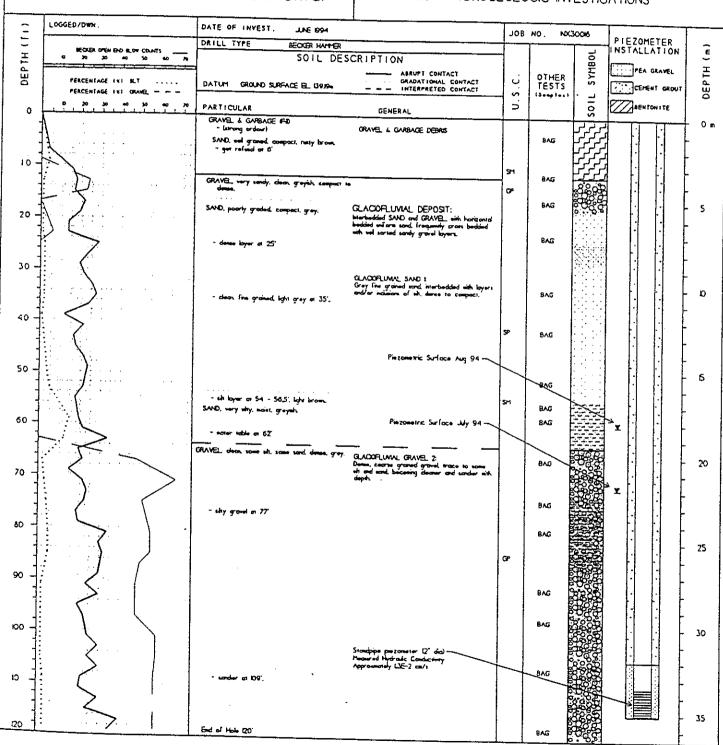
DISTRICT OF CAMPBELL RIVER LANDFILL, ARGONAUT ROAD 1994 HYDROGEOLOGIC INVESTIGATIONS





LOG OF BOREHOLE NO. HBT 94-4

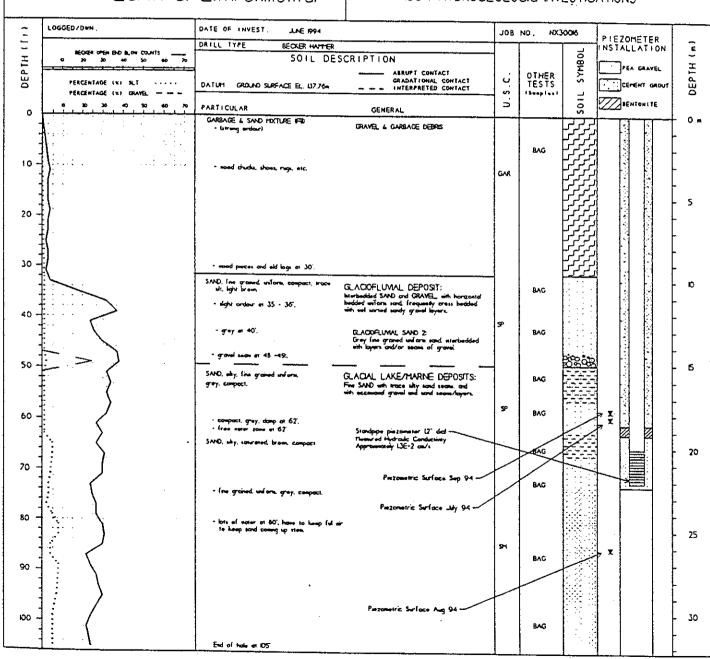
DISTRICT OF CAMPBELL RIVER LANDFILL. ARGONAUT ROAD 1994 HYDROGEOLOGIC INVESTIGATIONS





LOG OF BOREHOLE NO. HBT 94-5

DISTRICT OF CAMPBELL RIVER LANDFILL. ARGONAUT ROAD 1994 HYDROGEOLOGIC INVESTIGATIONS



EGIONAL DI	ISTRICT OF	COMOX-STRA	THCONA.	Drilling Contro					40: AG99- D: NX201360		
LANCITIDO	KONITORIN	G WELL INSTAL	נגזונ	Method: Becke	er Homme	<u> </u>		LEVATION:	11/201200	· -	
			(Japan Aug	701				economics.			
AMPLE TYP		GRAS (SOIL)	GRAB (WATE		ч	โรสองา	S JORILL C	บากพรร - รี	ISAND FILTER	2.2%	
ACKFILL	TYPE 🍱	BENTONITE	PEA GRAVE	r illistoae	a	K+ ISKON:				1 1	_
Depth(m) USC	SOIL SYMBOL	De	Soil escription	n	SAMPLE TYPE RUN NO	Additio Comme		20 40	ines ■ 60 80 iond ◆ 60 80 ravel ● 60 80	SLOTTED PIEZOMETER	(13)
0.0 oL - 2.0 oL - 3.0 sP/G - 5.0 sP/G - 6.0 sP - 7.0 sP - 8.0 sP/G - 11.0 sP/G	mo p - A y co	derately oxidized to 100 mm of the 100 mm of	grained, poorly ed, trace graveliameter. L — trace silt, ravel, trace silt.	poorly t, poorly	01 35 02						
13.0 14.0 15.0 16.0 17.0 18.0	00000 SI		ay, some fine	sand,	O			•			
19.0 M(19.0 M(20.0 land 21.0 land 22.0 land 23.0 land 24.0 land		minated. AND – trace	silt, fine graine	d, wet.	30 0	Cuttings are w	ret below 23.2				
25.0 S 26.0 S 27.0 28.0 29.0 29.0 30.0	00000		gravel, trace			DOSCED BY: J	N	ECOM!	PLETION DEPT		
	AGRA	Earth	& Envir	onmenta	1	REVIEWED BY:		COM	PLETE: 17/06	/99	
	11011		naimo, B.C.			INLARCH CD DI.	J.,			Poq	е.

in distribution of the control of the

REGIONAL D	IISTRICT OF COMOX-STRATHCONA	Drilling Contractor	. BEC	K Drilling	BOREHOLE NO: AG99-	01
JANCITICCA	MONITORING WELL INSTALLATIO	Method: Becker Ho	mme	r	PROJECT NO: NX2013604	
					ELEVATION:	
SAMPLE TO						
BACKFILL	TYPE BENTONITE PEA GRAVE	L SLOUGH	T	€ GROUT ØDF	RILL CUTTINGS SAND FILTER I	PΚ
Depth(m)	Soil Description	SAMPLE TYPE	RUN NO	Additional Comments	20 40 60 80 + x Sond + 20 40 60 80 - x Gravel - 20 40 60 80	SLOTTED PIEZOMETER
SM / ML SM /	SAND - some silt, fine grained, SAND - trace silt, fine grained, GRAVEL - little sand, clean, we occasional cobbles/cabble fragril 120 mm diameter. End of Hole at 48.5 m.	wet.	11			անարանարանարանարանարանարանարանարարանարանարանարանարանարանարանարանարանարանարանարանարանարանարանարանարանարանարանար
59.0 60.0	GRA Earth & Environ	am ontol	IL0	ogged by: Jw	COMPLETION DEPTH: 48.	

DNITORING WELL INSTA						OREHOLE NO: A	
	LLATIG.	Method: Becke	er Hamr	ner		ROJECT NO: NX20	
						LEVATION:	
GRAB (SOIL)	ZIGRAS (WATER)						
PE BENTONTE	PEA GRAVEL	[[[]] Sronc	Н	€ GROUT	DRILL C	JTINGS []]SAND	FLTER PI
3	~		إيرا				
<u>∑</u>	Soil		12	Additiona	a)	#% Fines ■	88 US
ת וֹכַ	vaanintian			induition.			88
<u> </u>	scription	L	N N	Comment	ls	20 40 60	80 07
SAND - city on	bloo suidinad as				 		80
a save - sitty, con	oules, oxidized, so	na is			ļ <u>i</u>		
SAND - trace sil	t, fine grained,		8 01				•
occasional gravel	, damp, poarly gr	aded.			ļ <u>.</u>		
o d					[<u>.</u>		1
					[<u>i</u>		
							•
SAND — some ar	avel, trace silt, m	ax 100 mm	₩4 D2				1
O. 4	poorly graded.						4
V_1							
0							1
SAND - fine grai	ned, trace sill, da	mp.	55 03				0 .
poorly graded.	,	Τ,					```
							•
							*
1		· 					
- silt lenses from	n 13.7 to 14.9 m.	•			-		٠٢
SAND - some gr	avel, trace silt, da	mo.	3 04	ļ			4
o poorly graded.	, , , -	F'					*
					ļ <u>.</u>		
							•
			05			• •	
ğ							1
0	<u>;</u>						1
JANU - Tine to n	nedium grained, tr	ace silt,	06		. a		•
8 TC.					<u>.</u>		1
هq 11							*
SILT - some fine	sand, law plastic,	, moist,	07				1
1.II					-		Y.
MI SAND AND SILT -	low plastic, mois	t.	08		<u>i</u>	E •	1
							!
				1	<u>-</u>		
							+
					27.7 m		
				depth.			•
							1
RA Farth s.	Farinan	ontol	11	LOGGED BY: JW		COMPLETION DEP	<u>ः । (६)</u> गामः ५१ ५।
	SAND - silty, color fine grained. SAND - trace silty occasional gravel SAND - some grained. SAND - some grained. SAND - fine grained. SAND - some grained.	Description SAND - silty, cobbles, oxidized, so fine grained. SAND - trace silt, fine grained, occasional gravel, damp, poorly graded. SAND - some gravel, trace silt, make diameter, damp, poorly graded. SAND - fine grained, trace silt, day poorly graded. SAND - some gravel, trace silt, day poorly graded. SAND - some gravel, trace silt, day poorly graded. SAND - some gravel, trace silt, day poorly graded. SAND - some gravel, trace silt, day poorly graded. SAND - fine to medium grained, trace wet. SAND - some gravel, trace silt, max 100 mm diameter, damp, poorly graded. SAND - fine grained, trace silt, damp, poorly graded. SAND - fine grained, trace silt, damp, poorly graded. SAND - fine grained, trace silt, damp, poorly graded. SAND - some gravel, trace silt, damp, poorly graded. SAND - some gravel, trace silt, damp, poorly graded. SAND - some fine sand, trace silt, damp, poorly graded. SAND - fine to medium grained, trace silt, wet. SILT - some fine sand, law plastic, moist, oxidized. SAND AND SILT - law plastic, moist. RA Earth & Environmental	Description SAND - sitty, cobbles, oxidized, sand is fine grained. SAND - trace silt, fine grained, occasional gravel, damp, poarly graded. SAND - some gravel, trace silt, max 100 mm diameter, damp, poorly graded. SAND - fine grained, trace silt, damp, poorly graded. SAND - some gravel, trace silt, damp, poorly graded. SAND - some gravel, trace silt, damp, occasional gravel, trace silt, damp, poorly graded. SAND - some gravel, trace silt, damp, occasional gravel, trace silt, damp, poorly graded. SAND - some fine to medium grained, trace silt, occasional gravel, trace silt, damp, occasional gravel, trace silt, damp, poorly graded. SAND - some fine to medium grained, trace silt, occasional gravel, trace silt, damp, occasional gravel,	SAND - sitty, cobbles, oxidized, sand is fine grained. SAND - some gravel, trace sitt, fine grained, occasional gravel, damp, poarly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - fine grained, trace sitt, damp, poorly graded. SAND - fine grained, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some gravel, trace sitt, damp, poorly graded. SAND - some sitte lenses from 13.7 to 14.9 m. SAND - some fine to medium grained, trace sitt, poorly graded. SAND - some fine sand, tow plastic, moist, oxidized. SAND AND SILT - low plastic, moist. SAND AND SILT - low plastic, moist. Water encountered at depth. Water encountered at depth.	Soil Description SAND - sitty, cobbles, oxidized, sand is fine grained. SAND - trace sit, fine grained, occasional gravel, damp, poorly graded. SAND - some gravel, trace sit, max 100 mm diameter, damp, poorly graded. SAND - fine grained, trace sit, damp, poorly graded. SAND - fine grained, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp, poorly graded. SAND - some fine sand, law plastic, moist, wet. SILT - some fine sand, law plastic, moist, oxidized. SAND AND SILT - low plastic, moist. COCCED BY: JW REVIEWED BY: JR	SAND - sity, cobbles, oxidized, sand is fine grained. SAND - trace sit, fine grained, occasional gravel, trace sit, damp, poorly graded. SAND - fine grained, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp, poorly graded. SAND - fine grained, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp, poorly graded. SAND - fine grained, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp, poorly graded. SAND - some gravel, trace sit, damp. SAND - some gravel, trace si	

DNIROTINON JANCITICO					K Drilling	BOREHOLE NO: AGO	
	WELL INSTALLATIC.	Method: Becke	r Ho	mm:	er	PROJECT NO: NX2013	604
11(D) 5 TVD5 (8),00	Din (con) Zionio (wa					ELEVATION:	
	RAS (SOIL) GRAS (WAT ENTONITE PEA GRAVE						
AURFILL TIPE (A) DI	ENTONIE PEA GRAVE	t March	- 		ROUT 🔀	DRILL CUTTINGS SAND FL	TER PI
_	C 1		TYPE	_			
pth(m) USC SYMBOL	Soil		4 1	2	Additional	20 40 60 80	——————————————————————————————————————
	Description	າກ	SAMPLE	RUN	Commente	◆% Sand ◆ 20 40 60 80	
SOIL	Description	J11	SA		Comments	● % Grovel ●	\dashv
30.0 A SAND	- little silt, poorly graded			09		20 40 60 80	
31.0	4 p y g. 2000	-,		03			-
32.0 SM 201							
33.0							
SAND	- troce silt, fine grained,	wet.		10		•	.]
34.0 SAND	•						
35.0							
36.0					Basid doll seests-dis-		<u>;</u>
37.0				11	Rapid drill penetration.		*
38.0							
00							
39.0							•
40.0							
41.0 SP 000							
42.0							4
43.0			2	12			•
0000							4
44.0							· · · · · ·
45.0							
46.0			2	13			
47.0							¥
48.0							
00		4		14			•
49.0 GRAV	EL — some sond, some co	obbles, cleon.	┰				ļļ.
50.0 GW 2020	•						
51.0]	1			+ 1
52.0 End (of Hole at 51.5 m.]				
53.0 Well i	installed.						-3
54.0							
55.0		•					
56.0							· <u>·</u>
57.0							
58.0							
59.0							<u>.</u>
60.0							
	Carth & Environ	nmantal			LOGGED BY: JW REVIEWED BY: JR	COMPLETION DEPTH	

:r:

REG!O	NAL DI	STRIC	T OF COMOX-STRATHCONA	Drilling Contro	ctor:	BECI	K Drilling	_	BOREHOLE	NO: AG9	<u>9-</u> 0
			ORING WELL INSTALLATIC	Method: Becke	r Ho	mme	r		PROJECT N	0: NX20136	604
									ELEVATION:		
SAMP	.E 7Yi	Έ	GRAB (SOIL) GRAB (Y.A	JER)							
BACK			BENTONITE PEA GRAV	Er [[[]]Sronch	-		<mark>₹-1</mark> GROUT	 ✓ JORILL	CUTIKGS]54ND FIL	TER PK
					سإ						
Ê		SYMBOL	Soil		¥	웆	Addition	al	■ % f 20 40	Fines = 60 80	SLOTTED
Jepth(m)	USC	S S			PLE					Sand �	
O O		SOIL	Descripti	on	SAMPLE	2	Commen	ts	20 40 ●% (60 80 Gravel ●	\dashv
		72.53							20 40	60 80	
0.0			SAND - some silt, fine to me	dium grained							
1.0		G G	sand, oxidized. SAND — some silt, fine graine	d. damp.	1		-		+		
- 2.0 	SM	a a	grey.	. (,							
- 3.0	ļ				State	01		ļ •		•	
- 4.0		17.	CANO	d and						<u> </u>	
5.0	SH/M	N	SAND — some silt, fine graine interbedded silt loyers up to							<u> </u>	
_ 5.0]	0.5	domp, grey.	TO THE BUILDY				ļ-,·			
6.0 7.0		190	SAND AND SILT - brow-grey,	domp.	7]			
7.0											
8.0	SM	S S			÷			Ŀ		1 0	
9.0	"				Š	02		 		1.5×	
								ļ			
10.0		177	000/51	:u J	4			ļ			
11.0		4.4	GRAVEL — some sand, trace : subrounded to subangular, m					[··			
12.0		2/2	mm, poorly graded.	ak diditio(di 100	25	 					
13.0	GP	717			HE OF S	03	:	ļ	E ♦		
₽			00.1151 1110 00110	Q 111				ļ-·			
14.0		717	GRAVEL AND SAND — trace si to 120 mm diometer recover	and the second s		8 04				.	
15.0		970	laraded.	cu, poorly			Fast penetralion	with drill.			
16.0		000	SAND AND GRAVEL - troce si	lt, well				}.			
17.0		070	rounded, well graded, damp.			05	Wet at 16.8 m t	gs. 🗯		e o	
Ē		474	Coursening at depth.		Γ	7		[:			
18.0) (1)	400	N Comment					ŀ			
E- 19.0)	4 <						[-			
20.0		44	GRAVEL - some coarse sand	, wet, well]			
21.0		4,4	graded.		_	06	Drill penetration	rate			
22.0			GRAVEL AND SAND — poarly of up to 150 mm diameter rec			4	slower.	ļ			
in the	ŀ		d ab to 150 min diameter rec	UY 61 6U.	3	07		Ť	•		
23.0	0	1			٦	7					
24.0	0	1	À								
25.		12:	- poor sample recovery. Ri	covered	-			i			
26.	GP	13:	material is cobble sized.	•							
<u>F</u>	1	Ti-	GRAVEL AND SAND - course	orgined sand				i			<u>i</u> .
27.	U	· P	Cobbles up to 100 mm dian			08					•
28.	0	1	poorly graded.		ı	- V	'	'		د چسپسفس اد ماسلسان	
29.	0	1	3								
30	0	14	4						lea: =	u ETIAN ASS	m. r
1		: 0	RA Earth & Envir	1_1			LOGGED BY: JR			PLETION DEP PLETE: 18/01	

### ### ##############################				T OF COMOX-STRA		Drilling Con					BOREHOL			0.
SAUPLIC TYPE SCHOOL (SOL) SOUTH SOUT	400/110	JK4L	MOMI	ORING WELL INSTAL	LATIO	Method: Be	cker Ho	mm	er				13504	
BACKFILL TYPE Sentente PEA GRAVEL				F				<u> </u>			ELEVATION	٧:		
Soil Description				_ 										
Description Easy Comments 20	BACKE	111	1155	BENTONITE	PEA GRAVEL	[[]]]SLO	UCH		SROUT	DRILL	CUTTIKGS	CVA2[]	FILTER I	Pi(
Description Easy Comments 20			ğ		α ·1		P.					_	·	
Description Easy Comments 20	틀	ည္က	YMB		2011		<u>\</u>	욷	Additional		20 40	Fines =	80	9
20 40 6 80 310 6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ept	Š		De	scription	n	/P	₹	C			Sand •	90	2
10 24 - well groded. 27 - 20 27 - 20			S	DC	scriptio.	TT	N/S	_	commend	S	• 7	Crovel •		,
10 23 24 25 25 26 26 26 26 26 26 26 26 26 26 26 26 26	30.0	GF	20.00			·					20 40	60	80	٦
-3.5 3.5	31.0		2727	- well groced.			, 24°	09		#	•			•
10 10 10 10 10 10 10 10	32.0		20.00											•
10 10 10 10 10 10 10 10	- 330		44							-				•
- 50.0 GW	-		2020											1
Sab	- 34.0	O#	44							·- 				•
- 31.0 - 38.0 - 3	- 35.0	GH	44									<u></u>		ì
- 98.0 - 99.0 -	- 36.0		20					10		ļ ķ		•		•
- 98.0 - 99.0 -	- - 37.0		99											Ì
-9.0 -9	-		44											Ì
- 40.0 Fig. 2 Filtren Filten Filter Filtren Filtren Filtren Filter Filtren Filter Fi	-		44								•••••••••••••••••••••••••••••••••••••••			
41.0 42.0 43.0 GRAVEL - some cobbles, little sand, poorly graded. 45.0 46.0 47.0 48.0 48.0 48.0 48.0 48.0 48.0 48.0 48	- 39.0		44			· -	- 1			 				
GRAVEL - some cobbles, little sand, poorly graded. GP GRAVEL - some cobbles, little sand, poorly graded. GP GRAVEL - some cobbles, little sand, poorly graded. It is graded. GP GRAVEL - some sand content. It is graded. The GRAVEL - some sand, well graded. GRAVEL - some sand, well graded. The GRAVEL - some sand, well graded.	40.0		ンジ	- poorty gradeo.				12		<u>k.</u>	•			
GRAVEL - some cobbles, little sand, poorly graded. GP GRAVEL - some cobbles, little sand, poorly graded. - 48.0 - 48.0 - 49.0 - 50.0 - 51.0 - 52.0 - 53.0 - 55.0 - 55.0 - 55.0 - 56.0 - 57.0 - 58.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0	-41.0		22	÷										
GRAVEL - some cobbles, little sand, poorly graded. GP GRAVEL - some cobbles, little sand, poorly graded. - 48.0 - 48.0 - 49.0 - 50.0 - 51.0 - 52.0 - 53.0 - 55.0 - 55.0 - 55.0 - 56.0 - 57.0 - 58.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0 - 59.0	- 42.0		71-7											:
44.0 CP 45.0 46.0 47.0 48.0 49.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 5	-		33	GRAVEL - some o	obbles, little so	ind, poorly		13						:
-45.0 -46.0 -47.0 -48.0 -49.0 -49.0 -50.0 -51.0 -52.0 -53.0 -54.0 -55.0 -55.0 -56.0 -57.0 -58.0 -59.0 -50.0	- 1		रोरो	graded.		,	\$£%							
- 46.0 - 47.0 - 48.0 - 49.0 - 50.0 - 51.0 - 52.0 - 53.0 - 54.0 - 55.0 - 55.0 - 57.0 - 58.0 - 59.0 -	-44.0	GP	-1-1]	<u> </u>			•
-47.0 -48.0 -49.0 -50.0 -51.0 -52.0 -53.0 -54.0 -55.0 -55.0 -56.0 -57.0 -58.0 -59.0	-45.0		44											
-47.0 -48.0 -49.0 -50.0 -51.0 -52.0 -53.0 -54.0 -55.0 -56.0 -57.0 -58.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -59.0 -60.0	- 46.0		11	- increasing sand	content.		点	14		··	•	.ej		Π
- 48.0 - 49.0 - 50.0 - 51.0 - 52.0 - 53.0 - 54.0 - 55.0 - 55.0 - 56.0 - 57.0 - 58.0 - 59.0 - 60.0	- - 47.0		< <										<u>i</u> [
-49.0 -50.0 -51.0 -52.0 -53.0 -54.0 -55.0 -56.0 -57.0 -58.0 -59.0 -59.0	-		33											
-50.0 GW 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- 1		4 4	CDAVEL some s	and wall arada									
-51.0 GW -52.0 -53.0 -54.0 -55.0 -56.0 -56.0 -59.0 -60.0	49.0		4 4	GRAVEL - Some S	ono, wen grade	:O.		15		.	•		,	
-52.0	- 50.0		arah A A	•	•									
-53.0 -54.0 -55.0 -56.0 -57.0 -58.0 -59.0 -60.0	-51.0	GW	4 4]				Ц
-53.0 -54.0 -55.0 -56.0 -57.0 -58.0 -59.0 -60.0	- 52. 0		20.24							} 				
End of Hole at 53.2 m. Drill penetrotion rate very slow. Drill bit blacked, withdraw to 50.6 m. 55.0 -56.0 -57.0 -58.0 -59.0 60.0	- 53.n		33											
Slow. Drill bit blacked, withdraw to 50.6 m.	-			End of Hale at 53	.2 m.				Drill penetrotion rat	e very :-				
-56.0 -57.0 -58.0 -59.0 -60.0	-								slow. Drill bit black	ked, "				
-57.0 -58.0 -59.0 60.0	- 55 .0	;							withdraw to 50.6 m	۱.		- -		
- 58.0 - 59.0 - 60.0	56.0	,				`			·					
- 59.0 60.0	-57.0													
- 59.0 60.0	- - 58.0									. .				
60.0	-													
		;								 				
	- JU.U			A Darit o	D			I	LOGGED BY: JR		CUMBI	דווטא טב	P∏H: 5.7	<u>,</u>

			ICT OF COMOX-STRATHCONA. ITORING WELL INSTALLATIO.	Drilling Cont			Etrilling	BOREHOL	ENO: AG99	<u>9</u> -
1	ارا: ۱۰۰۷	N:U:Y	HURING WELL INSTALLATIO.	Method: Bec	ker Ham	mer		PROJECT	NO: NX20136	<u></u> ئ0د
: S4MP	. <u></u>	rar	GRAS (SOIL) / IGRAS (V	·(X=0)				ELEVATION	₹ :	_
BACK		TYPE								_
10.01	1		E DEMORILE [FOX GRA	WEL SLOU	CH T	<u> (č</u>	ĴGROUT ☑DI	RILL CUTTINGS	SAND FILT	ĒR
(E)		SYMBOL	Soil		SAMPLE TYPE					
Depth(m)	SSC	\ X			MPLE TY	2	Additional	20 40	60 80	
a a		SOL	Descripti	ion	MM a	2	Comments	20 40	Sand ♦ 60 80	
- 00	<u> </u>	N WAY			S			20 40	Gravel •	_
0.0			SAND — silty, fine grained, ox trace gravel, damp.	idized,				20 70	50 80	
<u> </u>	SM		duce graver, dump.			1				
20										
3.0		N.	SAND — little gravel, trace silt	, well	-					
4.0	SW		graded, damp.						<u> </u>	
- 5.0		68								
- - 6.0		500	CAND	<u> </u>	01				•	
<u>.</u> 1		00	SAND — some gravel, trace si graded, damp.	it, poorly						
- 1	SP	00	3, 22 72, 22 p.		02	2			•	••••
- 8.0 -		000								
9.0		7 F	SAND AND GRAVEL - trace silt		 . ≤ ≠ 03					
- 10.0	20 / CD		graded, damp.	. ()	U.	'			•	
- -11.0	SP/GP	3.3								
- - 12.0		33		_						
-		6 6	GRAVEL — some sand, trace s	ilt, well	04			F •		
- 13.0 -			graded, damp.							
- 14.0		44								.
- 15.0	CW	2721 Q Q								
-16.0		2027	·		05		1		•	.
- - 17.0		24								
- 18.0		44							<u> </u>	-
. [00	SAND — little gravel, wet, poorl	y graded.	1					
- 19.0	SP	00			S25		er encountered ot 19.2			ľ
- 20.0	ļ	00	•		06	m.	1			-
21.0	į	77	GRAVEL AND SAND — medium t						.	ľ
22.0		166	oravet and Sand — medium t poarly graded, wet.	o coarse sond,						
- 23.0	GP .	रेरो			07			•		\cdot
.		13								
- 24.0	ļ.	000	SAND AND GRAVEL - poorty or	oded, wet.	-					
- 25.0	SP I	200	. •		08					
- 26.0	-	0.0		•						
27.0	æ	000]					
28.0			GRAVEL — some sand, poorly g	raded, wet.						
,	GP .				09			•		•
30.0		15					ŀ	V	•	1
		 	Earth & Enviror		<u> </u>	!	D BY: JW	COMPLET		١

REGIO	NAL D	DISTRI	ICT OF COMOX-STRATHCONA	Drilling Contrac	toc	DEC	W Delling	10	10000000	C 110 1000		
			ITORING WELL INSTALLATION	Method: Becker						E NO: AG99- NO: NX2013604		
				The state of the s					LEVATION		-	
SAMPI	LE TY	PΕ	GRAB (SOIL) GRAB (WATER)				,	ELITTION	· · · · · · · · · · · · · · · · · · ·		
BACK	TILL	TYPE	BENTONITE PEA GRAVEL	SLOUGH			€ GROUT	DRILL C	JTTINGS	SAND FILTER	DI/	
					[]					L. JOVIO TICIEN	<u> </u>	T
Depth(m)	OSC	SOIL SYMBOL	Soil Description	l	SAMPLE TYPE	RUN NO	Additional Comments		20 40 20 40	DI UTEL W	SLOTTED PIEZOMETER	Depth(ft)
30.0		7171							20 40	60 80	11.	
1.0 31.0 32.0 33.0 34.0 35.0 35.0 36.0 37.0 38.0 41.0 41.0 44.0 45.0 44.0 50.0 51.0 52.0 53.0 54.0 55.0 55.0 55.0 55.0 55.0 55.0 55	GP GP		GRAVEL — little sand, well graded, GRAVEL — some sand, poorly grad GRAVEL — some cobbles, trace sal graded. End of Hole at 45.4 m. Slow drilling. Well installed.	ed, wet.								100.0 105.0 115.0 125.0 125.0 135.0 145.0 155.0 165.0 175.0 185.0
55.0 56.0 57.0 58.0			,									185.0
59.0												130.0
60.0									ļ <u>.</u>			195.0
	Αſ	GR.	A Earth & Environm	ental			OGGED BY: JW	11	COMPLE	TION DEPTH: 45.	<u>i</u> _	
	111	1 b1		iciitai			VIEWED BY: JR			TE: 17/06/99		
<u>۵/۵/23 04:</u> ۵	16N (BO	லவ)	<u>Nanaimo, B.C.</u>				·			Pr	oge 2	of 2

en transmissione de la companyación
		tractor: BECK	Drilling	BOREHOLE NO: AGGG
AUDITIONAL KI	NITORING WELL INSTALLATIO: Method: Be	cker Hammer		PROJECT NO: NX201350
SAMPLE TYPE	GRAB (SOIL) / IGRAB (WATER)	:		ELEVATION:
BACKFILL TY				
DACKFILL II	PE & BENTONITE PEA GRAVEL WSC	DUCH [€ GROUT ∠	DRIEL CUTTINGS [[]]SAND FLTE
	g .1			
Depth(m) USC	Soil _	SAMPLE TYPE RUN NO	Additional	■ % Fines ■ 20 40 80 80
<u> </u>		골음		◆ 2 Sand ◆
	Description	SAM SAM	Comments	20 40 60 80 ● 7 Grovel ●
0.0	!!! Oxidized loam.			20 40 60 80
_ 1.0 OL	Oxidized Ioam.			
-				
- 2.0	SAND AND SILT — fine grained, low plastic.			
-3.0		2 01		
4.0				B ♦
. 5.0 ML				
3.0				
- 6.0				
- 7.0				
-8.0				
. I SM Hid	A	02		u
9.0	oxidized, damp. SILT AND SAND — fine sond, silt layers	- 03		♦ E
10.0	approx. 10 to 20 mm thick.			
11.0	opprox. To to 25 thin thek.			
12.0	SILT AND SAND - fine sand, little clay,	-1		
13.0	low plastic, wet, fragments show bedding	24 04		
14.0 ML	and laminations.	1 04		♦ 🖪
15.0				
(3.0	SILT — some clay, some fine sand, low			
16.0	plastic, moist to wet.	05		*
17.0				
18.0	-			
1 [11				
19.0	GRAVEL - little sand, trace silt, wet,			
20.0 GP	poorly graded.	₩ 06		200
21.0		_		
22.0	SAND — some gravel, trace silt, poorly graded, wet.			
l e	g graded, wet.	35 07		E • •
23.0	Ø			
24.0				
25.0	a c			
SP @	SAND - trace silt, medium to fine grained,	08		
26.0	poorly graded, wet.	- W		
27.0	∂ Q			
28.0	ø] &			
29.0				
30.0 P	9			
	· · · · · · · · · · · · · · · · · · ·	1 I	GED BY: JW	TOURISTION DEDTIL SE
AG.	RA Earth & Environmental		IEWED BY: JR	COMPLETION DEPTH: 50 COMPLETE: 18/06/99

SAIPLE TPE Section Description Section SAIPLE TPE				T OF COMOX-STRA ORING WELL INSTAL		Drilling Contr Method: Beck					CN 3JOH		
SACKFILL TYPE SEND AND PEX CRAWAL				Omite deal add	.0.1101	MEUTOU, DEG	(B) (1)	Hiros	At.			7.2013004	·
SAUD AND GRAVEL - poorly graded, cobbles SAUD AND GRAVEL - poorl	SAMP	E TY	Σ	GRAE (SOIL)	PIGRAB (WATER	₹)					ATION.		
Solidade							:H		☐ `` \	ZIDRILL COM	ugs Ellis	NA FETER	Ol:
Description Section						(11)				/	100 []3	אט וובוצג	I I
30.0 50.0	=		8		Soil		YPE				# 7 Finer #		
30.0 50.0	울	SC	SYM				برا	ž	Additional	20	40 60	80	冒
3.0.	l Ge	ر		De	scriptio	n	MPI	æ	Comments	20			210
3.10 SP SAND AND GRAVEL - poorly graded, cabbles 10 10 120 mm diameter. 10 10 120 mm diameter. 10 10 120 mm diameter. 10 10 10 10 10 10 10 1			S		1		S			20			
SAND AND GRAVEL - poorly graded, cobbles SAND AND GRAVEL - poorly graded, cobbles SAND AND GRAVEL - poorly graded, cobbles SAND AND GRAVEL - some sond, poorly graded, Low recovery, slow penetrotion rate.	F 1		000		· · · · · · · · · · · · · · · · · · ·						1 00		1
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M.0 Cep/ss Sand	32.0		0,0										H
37.0 CRAVEL - some sond, poorly graded, coccasional cobbles up to 120 mm diameter. CP CRAVEL Some gravel, poorly graded, wet. SE 11 CRAVEL Some gravel, poorly graded, wet. SE 11 CRAVEL SAND - some gravel, poorly graded, wet. SE 11 CRAVEL SAND - some gravel, poorly graded, wet. SE 11 CRAVEL SAND - some gravel, poorly graded, wet. SE 11 CRAVEL SAND - little gravel, trace sit, medium SE 12 SAND - little gravel, trace sit, medium SE SAND - little gravel, trace sit,	[33.0		9 9 9 9	SAND AND GRAVEL	. — poorly grad	ed, cobbles		09	 Fast_drill_penetration.		• •		4
SAND - some gravel, poorly graded, occasional cobbles up to 120 mm diameter. SAND - some gravel, poorly graded, wet.	Eunl		22	up to 120 mm an	ometer.		يهود		·				4
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38.0 GP 39.0 CP 39.0 C	36.0		33	~5 <i>55</i>							-	<u> </u>	•
38.0 CP	37.0		-1-1	GRAVEL - some s	iond, poorly gro	ided, m. diameter							4
9.0. CP 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0	38.0		33	occusional copple.	s up to 120 mi	n doneter.							1
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41.0 42.0 43.0 44.0 45.0 46.0 47.0 48.0 49.0 55.0 55.0 55.0 55.0 55.0 55.0 56.0 57.0 58.0 58.0 58.0 58.0 58.0 58.0 58.0 58			7)-7)									·	1
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to fine grained. 44.0 49.0 51.0 55.0 55.0 55.0 55.0 55.0 58.0 59.0 60.0	45.0		0,0			·						<u> </u>	
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51.0 End of Hole at 50.9 m. 52.0 53.0 54.0 55.0 56.0 59.0 60.0	50.0		00		•								
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- 54.0 - 55.0 - 56.0 - 57.0 - 58.0 - 59.0 - 60.0	52.0			Lild of floic dt 50	.5 111.							1 1	
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69.0													
AGRA Earth & Environmental LOGGED BY: JW COMPLETION DEPTH: 50.	60.0								000CD DV NV				Ĺ

			CT OF COMOX-STRA		Drilling Co				BOREHOLE NO: AGOS
AUUIII	J:VAL	N.O.M	TORING WELL INSTA	ACITAL	Method: 5	ecker H	lamm:	er	PROJECT NO: MX20136
SAMP	FTY	DE.	GRAB (SOIL)	GRAB (KIA	E0)				ELEVATION:
BACKE				- PEA GRAVE		011011		() 000 r	
G 10.11	132]	ESCHONIE	- Jrox Grave	r ∭sr	OUGH	1	E-)GROUT	DRILL CUTTINGS SAND FILTE
Depth(m)	osn	SOIL SYMBOL	De	Soil scriptio	on	SAMPI F TYPF	RUN NO	Additional Comments	# % Fines # 20 40 50 80 ◆ % Sand ◆ 20 40 60 80
0.0		J				U.			● 7 Gravel ● 20 40 60 80
- 1.0			SAND - medium	grained.					
-									
- 20 -									
- 3.0									
- 4.0								-	
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- 1	ŀ		- grades to fine :	and.					
14.0									
15.0									
16.0									
17.0		L	· 						
18.0			SAND — some gra	vel, little silt,	moist,		.		
			medium argined si	and.		- /	01	·	
19.0			SAND - little silt,	rine grained s	ond.		0		•
20.0				•					
21.0									
22.0							l		
23.0	l						-		
24.0							.		
25.0							1		
1			SILT — sondy, fine	grained, wet.		-			
26.0							02		
27.0									
28.0									
29.0									
30.0									
			A Earth &				ודמ		

Method Secker Hammer PROJECT NO. NIZO13				CT OF COMOX-STRATHCONA	Drilling Contro				BOREHOLE NO: AG	99.
SALP LE TYPE SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH Comments Additional Comments Additional Comments SOUTH SOUTH Comments Additional Comments SOUTH SOUTH Comments Additional Comments SOUTH SOUTH Comments SOUTH SOUTH SOUTH Comments SOUTH SOUT	00.1101	YAL K	ואוט:	TORING WELL INSTALLATION	Method: Becke	er Hamr	ner		PROJECT NO: NX201	360
Soil Soil Soil Description Fine Sand Sand Sand Sand Sand Sand Sand Sand	1110	- 70								
Soil Description The interbedded fine SAND and Sill layers, were wet. Sill - some fine sand, some clay, law plastic. Sill - some fine sand, some clay, wet. Sill - some fine sand, some clay, wet. Sill - some fine sand, some clay, wet. Sill - some fine sand, some clay, wet. Sill - some fine sand, some clay, wet. Sill - some fine sand, some clay, wet. Sill - some fine sand, wet, occasional silt lense approx. 0.3 m thick slows drill penetration rate. Find of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, roat blocked. Graut from 39.3 m to 25 m. Install well.										
Soil Description Description	ACKEIL	<u> </u>	17E	BENTONITE PEA GRAV	Er []]]SLOUCI	H	[¿-]GROUT	DRILL	CUTTINGS SAND F	ILTER
Description			٦			انیا				
Description	ا ق	ان	9	Soil		본	A d d:1:	,	■ % Fines ■	
Same Sample Sam	줎					빌Z	Additiona	u -	20 40 60 80)
- interbedded fine SAND and SILT layers, very wet. SILT - some sond, some clay, low plastic, soft. SILT - some fine sand, some clay, wet. SILT - some fine sand, some clay, wet. SILT - some fine sand, some clay, wet. SILT - some fine sand, wet, occasional sit lense approx. 0.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole slawghed in to 39.3 m, attempt to redifficiently rate blocked. Crout fram 39.3 m to 25 m. Install well. Install w	ă		렸	Description	on	\$ ≥	Comment	s L)
SILT AND SAND — fine sand, wet, occasional sit lesse approx. 0.3 m thick slaws drill penetration rate. Silt of the sand of	700					S				
Sill — some sond, some clay, law plastic, soft. Sill — some fine sand, some clay, wet. Sill — some fine sand, some clay, wet. Sill — some fine sand, wet, occasional sill lense approx. 0.3 m thick slaws drill penetration rate. — low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole staughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well. Install well.	1			— interbedded fine SAND and S	illT layers,	03			20 40 50 80	₽ ;
soft. SiLT – some fine sand, some clay, wet. SiLT AND SAND – fine sand, wet, occasional silt lense approx. 0.3 m thick slows drill penetration rate. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.		ĺ				Ш				
SILT – some fine sand, some clay, wet. SILT – some fine sand, some clay, wet. SILT AND SAND – fine sand, wet, occasional silt lense approx. 0.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well. Solo 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	32.0			SILI — some sand, some clay,	law plastic,	04				•
SILI - Some line sand, some clay, wet. SILI - Some line sand, some clay, wet. SILI AND SAND - Tine sand, wet, occasional silt lense approx. 0.3 m thick staws drill penetration rate. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. install well. In a continuation of the continuation	33.0		L.	_		(2. 05				
Silt AND SAND — fine sand, wet, occasional silt lense approx. 0.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	ŀ	İ	- 1	SILI — some fine sand, some of	clay, wet.					··· :
SILT AND SAND — fine sand, wet, occasional silt lense approx. 0.3 m thick slaws drill penetration rate. — low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. install well. In an an an an an an an an an an an an an)4.U									
SILT AND SAND — fine sand, wet, occasional sitt lense approx. 0.5 m thick slaws drill penetration rate. — low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well. Install well.	35.0									
SILT AND SAND — fine sand, wet, occasional silt lense approx. 0.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blacked. Grout from 39.3 m to 25 m. Install well.	36.0									
SILT AND SAND — fine sand, wet, occasional silt lense approx. 0.3 m thick staws drill penetration rate. — low recovery, silty fine SANDS. — low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole stoughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well. Inc.	.,						l			·- .
SiLT AND SAND — fine sand, wet, occasional sitt lense approx. 0.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. install well. Install well.	0.11									
Silt AND SAND — fine sand, wet, occasional silt lense approx. O.3 m thick slaws drill penetration rate. - low recovery, silty fine SANDS. - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Graut from 39.3 m to 25 m. Install well. Install well.	0.82									
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2.0 - low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	İ	1		siit lense approx. U.J m thick s	laws drill			[
- low recovery, silty fine SANDS. End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout fram 39.3 m to 25 m. Install well.	1.0			peried adolf Tale.						
End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	2.0			·						Ļ
End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	30]	 low recovery, silty fine SANDS).					
End of Hole at 45.1 m. Hole stoughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.										<u>.</u>
End of Hole at 45.1 m. Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	4.0		İ							
Hole sloughed in to 39.3 m, attempt to redrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	5.0		L							.
7.0 Fedrill, rods blocked. Grout from 39.3 m to 25 m. Install well.	5 n									<u>.</u>
Grout from 39.3 m to 25 m. install well.	- 1		1	tole sloughed in to 39.3 m, att	empt to					. <u>†</u> -
1.0 Install well.	/.0									·
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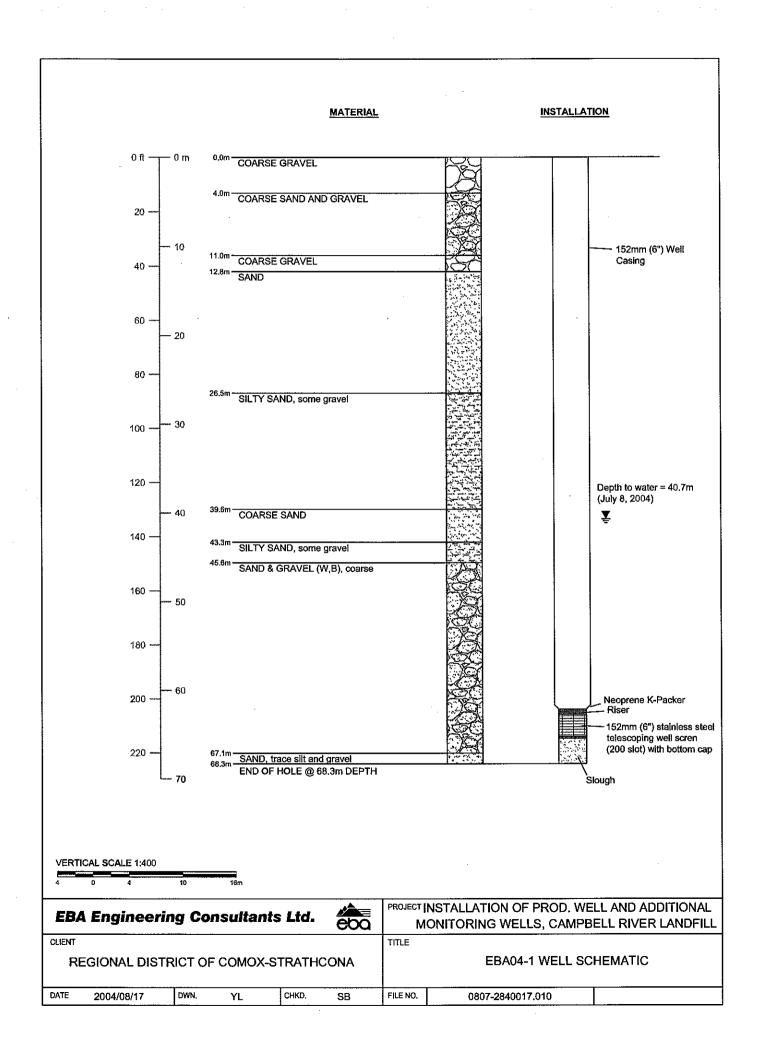
	RICT OF COMOX-STR		Contractor			BORE	HOLE NO: AM
POWING KI	INITORING WELL INSTA	ELAHO .	Method: Be	scher Ham	mer, Hollov Stem	PROJ	ECT NO: NX:2023
SAMPLE TYPE	Œ-GR48 (SOIL)	CICDID (WITT	1 7/100	-		ELEVA	HOH:
	PE EBENTONITE	GRAS (WATE)			1. 3.00.0		
	E LEDUKIONIL	I. JELA GRAVEL	∭SL(DOGH	[¿₊]GROUT	DRILL CUTTING	gs 🔝 sand fil
sth(m) SYMBOL		Soil		띭			
Depth(m)				N N	Additiona	1	
SOIL	Desc	ription		SAMPLE	Comments		
		1		5	VOIIIIICIIC.	● Becker I	Hommer Blow Count
0.0 GA	RBAGE – plastic, wo	od, rags, etc.			·····	100	200 300 400
-1.0							
- XX							
- 2.0							
 ₩							
- 3.0						1	
- 4.0							
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8.0 💥 0.8						Į.	
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9.0							
₩ Bla	ck sludge with sewa	ae adaur aalad i	en-m			}	
10.0 8 9.5	m to 10.7 m bgs.	ye oddur 110(ed 1	1011				
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						7	
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		ironment		!!		•	

	RICT OF COMOX-ST		Contractor: {	BECK I	Drilling			COMA : ON 3	
ADDITIONAL MO	NITORING WELL INS	TALLATIC.	Method: Beck	ter Ho	mmer, Hollov Stem			NO: MX202550	13-1
SAMPLE TYPE	GRAB (SOIL)	GRAB (Y/ATER)) XISPT			<u> </u>	HOITAV	i:	
	PE BENTONITE	PEA GRAVEL	SLOU	SH	[¿-]GROUT	PORILL CUTT	INGS	SAND FILTE	E PI
E Depth(m) Solt SYMBol	Des	Soil cription		SAMPLE TYPE RUN NO	Additional Comments	● Beck 100	er Hami 200	mer Blow Count • 300 400	SIDITED
29.0 24.0 29.0 SAI	AVEL — some sand	d, very dense, grey dense, moist, grey. an, very dense, mo		G1 G2		one.		LETION DEPTH:	

e de la proposición de la companya de la companya de la companya de la companya de la companya de la companya

		L DISTRICT OF COMOX-STRATHCOM	Contractor	: BECK I	Drilling	BOREHOLE NO: AM	00.01
,		AL MORITORING WELL INSTALLATIO.			immer, Hallov: Stem	PROJECT NO: NO:2025	00-01
						ELEVATION:	1002-500
		TYPE GRAS (SOIL) ZIGRAS (KATER) XISPI	ſ			
B40	KFI	L TYPE BENTONITE PEA GRAVEL	∭SLC	DUÇH	[¿·]GROUT [∑	DRILL CUTTINGS SAND FIL	TED DV
Depth(m)	IOBINAS IIOS			SAMPLE TYPE RUN NO	Additional		SLOTTED SLOTTED PIEZOMETER Depth(ft)
- 15.0				122	Johnsones	Becker Hommer Blow Count 100 200 700	• 8 9
35.0	60	<u>aL</u>	-			100 200 300 400	
37.0 38.0 39.0 40.0 42.0 42.0 43.0 44.0 45.0 45.0 51.0 52.0 51.0 52.0	なななななななななななななななななななななななななななななななななななななな	End of Hole at 48.5 m.	gs.	G5	Boulder encountered at 36.9 m bgs.		10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
-53.0 54.0		2nd attempt located 10 m S of 1st atten	ıpt.				175.0
AM	EC	Earth & Environmenta	<u> </u>	<u> </u>	LOGGED BY: BH	CONTRACTION SCOT	L E
0/ 0 4/27 1E		N = * * *	r rimi	ted 	REVIEWED BY: CM	COMPLETION DEPTH: 4	

	oundwater Monitoring		BECK Drilling and E	nvironmental Services	BOREHOLE MC:	41/00/11
Pegional	District of Compx—Stratt		Acker Tractor Air Ro		PROJECT NO: N	
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	ELEVATION:	
B4.06/F111	TIPE BEKTONITE	PEA GRAVEL	[]][aroneH	2-19R0UT	EXERCIL CUTTINGS (COS	
						:
Depth(m)			So	il		SLOTTED
						OTTIO
Soll			Descri	ption		<u>S</u>
- 0.0 k-0m	SAND and GRAVEL -	braum da.				
	cobbles to 0,15 m d	iametre				
	SAND — fine arained,	grey, dry				
	SAND and GRAVEL —	grey, dry				
- 10.40	SAND — medium gra	ned grey damp	·			
5.0	SAND — some gravel		Orev	P. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.		
	damp	, modalii grameu,	y, =y ,			
- 4.		٠	•			
	A.					
10.0	· 	•				9
	i					
150 0	SAND — trace silt, m moist	edium grained, bro	own,			——————————————————————————————————————
- 13.0						
	SAND — some gravel damp	, medium grained,	brown,			
						A
				•		
20.0						
= *::						
	.					
	SAND and GRAVEL -	medium argined	nrown.			
25.0	damp	modium gramoz,	,			
8.3	SAND — coarse grain	ed brown wat				
	- Groundwater encor					
- 30.0						日
						A
			<u>. </u>			II
25.0	End of Hole at 33.2	m. Monitoring well				
35.0	installed to 32 m. S	creened from 19.8	of to			
-						, de la companya de l
-						
						ļ !
40.0						



Monitoring Wells Campbell River Lar		Drillwell Enterprises		BOREHOLE N	
Regional District of Comox-Strathc	ona I	Drilling Method: Air	Rotary	PROJECT NO	2840017.0
				ELEVATION:	
BACKFILL TYPE BENTONITE	PEA GRAVEL	SLOUGH	GROUT	DRILL CUTTINGS	∐SAND
	C - 21				
Depth(m)	Soil	_		Field Notes	
Dep.	Descrip	tion			
	1	-			
GRAVEL CAP 1.0 WOOD FIBRE					
-20 GARBAGE				1	
3.0 WOOD FIBRE				<u> </u>	
GARBAGE GARBAGE					
5.0 - SAND & GRAVEL				CASING LEFT IN GROUND	
6.0				TO DEPTH OF 33.5m.	
7.0			•		
8.0 COARSE GRAVEL				_	
9.0					
- 10.0 1 1 1 1 1 1 1 1 1					
-11.0 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3					
~ 12.0 44					
-13.0 -14.0					
- 15.0 -					
- 16.0 - 19.1					•
17.0					
18.0					
19.0					
20.0					
-21.0			•		
-22.0					
23.0					
- 24.0 - 25.0					
-26.0 **		•			
-27.0 -27.0					
28.0					
-29.0					
30.0					
31.0					
32.0					
33.0					
- 34.0 - 35.0					

Monitoria	ng Wells Campbell River Lo								
Regional	District of Comox—Strath	сола	Drilling Method: Air	Rotary		PROJECT	NO: 284001	7.010	
						ELEVATION	1 ;		
BACKFIL	L TYPE BENTONITE	PEA GRAVEL	IIII SLOUGH	GROUT	ORILL	CUTTINGS	SAND		
	SOIL SYMBOL	Soi Descrip			Fi	eld Not	es	SLOTTED PIEZOMETER Depth(ft)	
35.0 36.0 37.0 38.0 39.0 40.0 41.▼ 42.0 43.0			•		·			115.0 120.0 1125.0 130.0	
45.0 46.0 47.0 48.0 49.0 50.0							1	145.0 1 150.0 1 150.0 1 160.0 1 160.0 1 165.0 1 175.0 1 175.0	
55.0 54.0 55.0 55.0 56.0 57.0								185.0 185.0 185.0 190.0	
61.0 62.0 63.0 64.0 65.0 66.0 67.0	END OF HOLE @ 65.9							200.0 205.0 210.0 215.0 220.0	
- 70.0 EBA	Engineerin	ıg Consu	ltants Lt	d. REVIEWED BY: M	K SB		Pletion dept Plete: 07/07	H: 65.5 m	

and the same and the same of the same of the same of the same of the same of the same of the same of the same of the

Manitoring Wells Campbell River Landfill					BOREHOLE NO: EBAO4-3			
Regional District of Comox-Strathcona	Drilling Method: Air Rota	ry			vo: 2840017.01	0		
				ELEVATION:				
BACKFILL TYPE BENTONITE PEA GRAVEL	SLOUGH	grout	⊠ DRILL (CUTTINGS	SAND			
Soi Symbol Descrip			Fie	eld Note	9 8	SLOTTED PEZOMETER Depth (ft)		
SAND SAND		JOGGFD BY: MO	ASING LEFT IN O DEPTH OF 1	IcomP	LETION DEPTH:	10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0		
EBA Engineering Consu	ltants Ltd.	reviewed by: S	SB	COMP	LETE: 07/07/04	Į		
04/12/16 12:10PN (SHELY)						Page 1 of 2		

antana mananda kamanda katan mengantan kamanda kamanda kamanda kamanda kamanda kenala kenala kenala kenala ken Kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenala kenal

							ELEVATIO		
BACKFI	Ш.	TYPE BENTONITE	PEA GRAVEL		₄. ¹GROUT	ORILL	. CUTTINGS	SAND	
	点		<i>a</i> .	· 1					i
Depth(m)	SOIL SYMBOL		Soi	ıL		Fi	eld Not	es	SLOTTED PIEZOMETER
)sept	S		Descrij	ntion					SIO
	ଞ		Descri	OCTOIL					
35.0	. :								1
36.0 . 	::1			•					
37.0	· : 1								
38.0	·: 1								
39.0									
40.0	*: Ì								
41.0	∴	CND OF HOLE & 44.0	DELOW OLDER	OF		•			
42.0		END OF HOLE @ 41.2 NOTE: SOILS LOGGET							
43.0				• •					
44.0									
45.0									
46.0					1				
47.0									[4
48.0									
49.0					ļ				
50.0									
- -51.0									
52.0									<u> </u>
- -53.0									
- 54.0									
- -55.0		•							
- 56.0									
- 57.0									
- 58.0									<u> </u>
 59.0		١							
60.0									
61.0									<u> </u>
62.0									
- - 63.0									<u>ក្រុមពិភាពគ្រួ ពាធារាមួយនេះបញ្ជាបានក្បាយពាធ្យាពាធារាមួយពាធារួមពាធារាមួយពាធារាមួយពាធារាមួយពាធារាមួយពាធារាមួយពាធារ</u>
64.0									
65.0									
- 66.0					l				
67.0									
- 68.0									
69.0									
- 69.0 - 70.0		·							
	. 1	In vin a anim	~ Cons	ltanta It	LOGGED BY: MC) 		PLETION DEPT	
		Engineerin	ig cousu	mants Lto	T. KEAFAFA BA: 3	DB	COM	PLETE: 07/07	704 Page 2 o
04/12/16 12	ETOPM	(ZHEITA)							

Monitoring Wells Campbell River Landfill	Sonic Drilling Ltd.			NO: EBA			
Regional District of Comox—Strathcona	Drilling Method: Sonic				NO: 2840017	.010	
				ELEVATION			
BACKFILL TYPE BENTONITE PEA GRAVEL	STORCH	₃. grout	DRILL	CUTTINGS	SAND		
Soi Soi Descrip			Fi	eld Note	es	SLOTTED	Depth(ft)
GARBAGE 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 20.0 21.0 22.0 23.0 24.0 25.0 25.0 26.0 27.0 38.0	rted.					- 177	10.0 0.0 15.0 10.0 15.0 10.0 15.0 10.0 10
35.0 4		LOGGED BY: MC	· · · ·	CVI10	LETION DEPTH		╨┈┈┤
EBA Engineering Consu	ltante Itd	REVIEWED RY	SB		LETE: 15/07/		
	ivuiito blu.					Page	1 of 2
04/12/16 CE:51PM (SHELLY)						. 44	

Monitoring	g Wells Campbell River Landt	······································				BOREHOLE	NO: EBA04	<u>-4</u>	
Regional	District of Comex—Strethcon	0	Drilling Method: Soni	С		PROJECT I	NO: 2840017.0	10 .	
						ELEVATION			
BACKFILL	TYPE BENTONITE	PEA GRAVEL]]]slough	⊊- ¹GROUT	DRILL	CUTTINGS	SAND		
Depth(m)		Soi Descrip			Fi	eld Note	2 8	SLOTTED PIEZOMETER Death(ft)	- 1.
35.0 4 35.0 4 35.0 4 36.0 4 41.0 4 42.0 4 43.0 4 45.0 4 45.0 4 46.0 4 47.0 4 48.0 4 49.0 4 49.0 4 40.0 4	END OF HOLE @ 53.3 m NOTE: SOILS LOGGED BY	PEBA STAFF.		LOGGED BY: M	C	COMPI	LETION DEPTH:	11 12 12 12 13 13 14 14 14 15 15 16 16 16 16 16 17 17 18 18 18 19 19 19 12 12 12 12 12 12 12 12 12 12 12 12 12	25.0 30.0 35.0 40.0 35.0 45.0 55.0 70.0 80.0 80.0 95.0 95.0
IERA	Engineering	Consul	Itants Ltd	REVIEWED BY:	SB	COMPI	lete: 15/07/04	ļ	
84/12/16 N2-51P								Page 2 of	2

regiona	District of Co	smox—Stratha	cona	Drilling Method: Sonic			PROJECT NO: 2840017.010			
ם מינים	1 DIDE					ELEVAT				
BACKFI	1 TYPE	BENTONITE	PEA GRAVEL	SLOUGH	⊊. GROUT	DRILL CUTTING	S SAND			
Depth(m)	SOIL SYMBUL		Soi Descrip			Field No	otes	SLOTTED PIEZOMETER Depth(ft)		
0.0 1.0 2.0 1.0	GARBAGE SAND & G sub-angu	lar, compact	um to coarse gr t moist			WELLSCREEN FULL OF BENTONITE, WELL TO E REDRILLED.	ĐE.	15.0 5.0 10.0 10.0 10.0 10.0 10.0 10.0 1		

		ells Campbell River Lar trict of Comox—Strathc		Sonic Drilling Ltd.			E NO: EBA04-
regions	JI DIS	rice of Comox-Strathe	DAG	Drilling Method: S	DNIC	ELEVATIO	NO: 2840017.01
BACKFI	II T	YPE BENTONITE	PEA GRAVEL	∭SLOUGH	€ GROUT	DRILL CUTTINGS	SAND
	-	TO DESIGNATE	L.J. 57 011112	IIIIozoon	<u> 3-</u> 31137.	€∑Jornac ootinitoo	
E	SYMBOL		Soi]	·	Field Not	es
Depth(m)	₹					Field Not	JES .
원	SOL		Descrip	otion			
- 35.0 ·		· · · · · · · · · · · · · · · · · · ·					
-36.0	· •					-	
E 37.0 :				•	ľ		
38.0							
E 39.0 -					1		
40.0		•				•	
41.0	* .						
- 42.0							
43.0	1.4						
- -44.0							
45.0	·						
47.0							
48.0							
49.0							
50.0	*:						
-51.0							
52.0							
53.0	\						
54.0	* A	– some cobbles @ 53	.3m				
55.0		 little recovery between 	en 53.3 to 67.1	m	,		
56.0	i						
57.0							
58.0							
59.0							
60.0							
61.0							
62.0						·	
63.0							
64.0							
65.0							
66.0							
67.0					-		
F 1		END OF HOLE @ 67.1	m BELOW SURFA	CE			
69.0		NOTE: SOILS LOGGED	by EBA STAFF.				
70.0							
א כונינו	1.	3	~ ^	11 L - 7 t	LOGGED BY: MC		PLETION DEPTH: 6
止口角	L	Ingineering	g consu	nants L	Cd. REVIEWED BY: S8	COM	PLETE: 07/07/04

Kegio	nal D	istrict of	Comox-Strath	cona	Drilling Method:	Air Rotary		PROJECT NO: 284001	7.010
DACU	<u> </u>	TVD# ■	Dr. Paris	• Maria maria pro-	[]]]]a. z		[77]	ELEVATION:	
BACK	1.	TYPE	BENTONITE	PEA GRAVEL	∭slou c H	€ GROUT	DRILL	, CuttingsSand	
F	SYMBOL			Soi	1		77	1117	
Depth(m)	S.						l l'1	eld Notes	OTTE
ä	SOIL			Descri	otion				SLOTTED PIEZOMETER
6.5									111
0.0 1.0	88	SAND					CASING LEFT IN TO DEPTH OF 2		
- 2.0									
- - 3.0	00								
4.0				•					
- 5.0		SAND,	some gravel						
- 6.0	44	COARSI	E GRAVEL						
-7.0	200		- 01011-22				ļ		
- - 8.0	202							•	
- 9.0	20 4 20 4								
10.0		SAND &	k finer grave				_		
11.0				_			İ		
- 12,0							1		
- 1 3. 0									
14.0	· · ·								
15.0		SILTY S	CAMP				4		
16.0	0.0	SAND	MILO				-		
- 17.0	N.U.								
- 18.0	談								
19.0									
20.0 21.0	0.0					-			
21.0 22.0	HA:U								
- 22.0 - 23.0	. 4		& GRAVEL, sligh	ntly silty					
			·	·					
- -25.0	1111	01.75	N110 1	, , , ,	,		_		
26.0	1444	SILIY S	SAND, brown						Ц
_ _ 27.0	EHE								
28 <u>.0</u>]							
28.0 <u>¥</u> 29.0	1111	SAND 8	& GRAVEL				_		Π
30.0									
31.0	4 : 4								
- -32.0		ĺ							
_ _33.0	:								
34.0									
35.0		l		_		LOGGED BY:	MC	COMPLETION DEP	TH: 39.6
H'R	Δ	E'nø'	ineerin	g Consu	ltants I	td. REVIEWED BY	r: SB	COMPLETE: 13/0	7/04 Pag

	lel l s Campbell River Landf		Drillwell Enterp	orises Ltd	1.		BOREHOLE NO: EB/		
Regional Dist	trict of Comox—Strathcan	0	Drilling Method	l: Air Rot	tary		PROJECT NO: 28400	17.010	
							ELEVATION:		
BACKFILL T	YPE BENTONITE	PEA GRAVEL	Srone!	H	GROUT	 ✓ URILL	CUTTINGS SAND		
Depth(m) SOIL SYMBOL		Soi Descrip				Fi	eld Notes	SLOTTED PIEZOMETER	Depth(ft)
35.0	END OF HOLE @ 39.6 m NOTE: SOILS LOGGED BY	BELOW SURFA	CE						115.0 120.0
69.0									225.0
70.0									
EBA E	Ingineering	Consul	tants	Ltd.	LOGGED BY: MO REVIEWED BY:	C SB	COMPLETION DEP COMPLETE: 13/0	7/04	2 of 2

Kegional	Jistrict o	f Comax—Strathe	ona	Drilling Method: Air	Rotary	PROJECT NO: 28	40017.01
BACKFILL	TYPE	BENTONITE	PEA GRAVEL	[[[]slough	GROUT	ELEVATION: DRILL CUTTINGS	VO
	1	=					
Depth(m)			Soi			Field Notes	
Soll			Descrip	otion			
- 0.0 50 - 1.0 S	SAND	·				CASING LEFT IN GROUND TO DEPTH OF 11.2m	
2.0	Š					DEFINE OF TIME	
E 3.0 🔯	ĝ N				•		
5.0 ···	SAND,	some gravel				- ·	
6.0		SE GRAVEL				_	
7.0	<u> </u>	& GRAVEL				-	
- 80 · :	*				•		
-9.0 - 10.0							
11.0							
12.0							
13.0							
15.0	L CUTY	- ALUB					
E 16.0	SAND	SAND				1	
17.0	Š						
19.0	р Х						
20.0							
21.0 -22.0							
23.0	SAND	& GRAVEL, some	e silt				
24.0							
—25.0 e& —26.0, ::1	SILTY	SAND, brown				_	
27.0							
E 28.0							
29.0 · · · · · · · · · · · · · · · · · · ·	SAND	& GRAVEL					
-31.0 ·							
32.0	END C	F HOLE @ 32.0	m BELOW SURFA	CE		4	
-33.0			BY DRILLWELL ST				
-34.0 - 35.0		·			1		0555
DD A	Fra	inaarina	a Conqui	ltants Lt	LOGGED BY: REVIEWED BY	MC COMPLETION 2: SB COMPLETE: 1	

Projec	t: Stage 2 PSI	Client: Co	mox	Valle	y Re	gional District		PROJECT NO BO	REHOLE	NO.
Location	on: Block J, CRWMC	Drilling Co	ontra	actor: [Drillw	ell Enterprises		N23101802 - E	BA11-01	
Client:	Campbell River, BC	Drilling Me	etho	d: Air	Rota	ry				
SAMP	LE TYPE DISTURBED NO RECOVE	RY X	SPT			A-CASING	SHEL	BY TUBE CORE		
BACK	FILL TYPE 📗 BENTONITE 📝 PEA GRAVE	L S	SLOU	IGH		GROUT	DRILL	CUTTINGS SAND		
Depth (m)	SOIL DESCRIPTION		SAMPLE TYPE	OSC	SOIL SYMBOL			NOTES & COMMENTS	EBA11-01	Depth (ft)
0	SAND, fine grained, loose, homogeneous, damp, orange	and white			***	•			NIN NIN	열
November 17, 2011 ■ 0	SAND, fine to medium grained, loose, moist, grey - Trace silt at 6.1 m - Compact at 8.5 m SAND, fine grained, trace gravel, small, grey - Trace silt at 11.3 m - No silt at 11.7 m - Coarse sand at 14.3 m SAND, fine grained, homogenous moist, brown - Trace small gravel at 15.2 m SAND, trace to some silt, very fine grained, moist, grey - Silty at 19.8 m - Moist to wet at 20.7 m - Saturated at 23.2 m			SW						0-11-11-11-11-11-11-11-11-11-11-11-11-11
30	End of hole at 29.0 m								<u>* </u>	95
			-			OGGED BY: MG		COMPLETION DE	PTH: 28.9	
Ē	2 00				F	REVIEWED BY:		COMPLETE: 11/15	/2011	
A TETRA	ATECH COMPANY				[RAWING NO: 1		Page 1 of 1		

	t: Subsurface li						_	ional District	1,00		PROJECT NO BOR		NO.
-	on: Block J, CR					_	_	Il Enterprises			N23101803 - EB	A11-02	
	ampbell River,			Drilling Me		: Air F	Rotar				-		
	LE TYPE	DISTURBED	NO RECOVE		PT			A-CASING			BY TUBE CORE		
BACK	FILL TYPE	BENTONITE	PEA GRAVE	L [[[]] S	LOUG	3H		GROUT		RILL	CUTTINGS SAND	.,	
Depth (m)		SOIL DESCRIP	TION		SAMPLE TYPE	nsc	SOIL SYMBOL				NOTES & COMMENTS	EBA11-02	Depth (ft)
0	SAND (FILL), s	ome gravel, fine to co	arse grained, loose,	brown		FILL	\otimes						0 <u>.</u> 5 <u>.</u>
10	grey and	some gravel, fine to n brown		se, damp,		SW							0 5 10 15 20 35 35 40 45 55 70 75
November 17, 20	SAND, silty, ve - Saturated at 2	ry fine grained, satura 6.5 m	ted, grey			SM							SNovember 15, 201
_ 30	SILT, sandy, fir	ne grained, soft, grey				ML							100
-	SAND, gravelly saturated	, trace silt, medium to , grey	coarse grained, loo	se,		SW	, L.						110
— — 40	End of hole at 3	35.0 m					• • •					·:	100 105 110 115 120 125
40	<u>^</u>	58-50 Shell-1-3000			£ 1		TLO	OGGED BY: MG		_	COMPLETION DEP	TH: 35	
É	200						R	EVIEWED BY:			COMPLETE: 11/16/	2011	
	ATECH COMPANY	EDA COT 44//0//					DI	RAWING NO: 6			Page 1 of 1		
ENVIRONM	ENTAL N23101803.GPJ	EBA.GDT 11/18/11									8 2 1		

Project	t: Stage 2 PSI			Client: Co	mox	Valley	/ Reg	ional District			PROJECT NO BOR	EHOLE	NO.
Location	on: Block J, CR\	NMC		Drilling Co	ontrac	ctor: D	Orillwe	ell Enterprises			N23101802 - EB	A11-03	
Client:	Campbell River	, BC		Drilling M	ethod	l: Air F	Rotar	y					
SAMP	LE TYPE	DISTURBED	NO RECOVE	RY 🔀 S	SPT			A-CASING	SI SI	HELBY	TUBE CORE		
BACKI	FILL TYPE	BENTONITE	PEA GRAVEL	_ []]	SLOUG	SH .		GROUT	DI	RILL CL	JTTINGS SAND		
Depth (m)		SOII DESCRIF	PTION		SAMPLE TYPE	OSC	SOIL SYMBOL				NOTES & COMMENTS	EBA11-03	Depth (ft)
0	\ brown		trace sand, soft, moi	1		TOPSO SM						30 30	0
_	SILT, trace sand reddish bro	, trace organics, fine own	to coarse grained, s	oft, moist,									°∃ ∃
		stiff, moist, light bro	wn			SC							10=
_													3
-	OAND Contract	and the second state of			4								15를
_		-	e, damp, tan coloured	1									203
	- Brown at 6.1 m												3
_							****						25=
_	- Compact at 7.9												201
10	- Loose at 8.8 m						***						30-3
_ '0													35
							****					* *	3
_												••	40=
													45=
-							****						100
													50=
-						CW	***						3
						SW							55=
_ [****						60
	SAND, fine to co	arse grained, moist,	grey										3
20													65=
<u>¥</u>													▼ _=
 7, 2011 <mark> </mark>												Ĭ	7, 28
er 17	- Saturated at 22	.6 m, trace gravel											\$5= <u>1</u>
November 17,		, , , , , , ,											vemt
ž							****						2 03
													85=
_							****						3
													90
_	SILT, sandy, trac	ce gravel, very fine g	rained, soft, saturate	d, grey	1		İİ						晨。
						SM							90-3
30	End of hole at 30).1 m			+ $ $								95
													4
-													105=
													110=
_													105 110 110 110 11 5
35							1.	OCCED DV: MC		- 1	COMPLETION DED	THI 20	115
								OGGED BY: MG EVIEWED BY:			COMPLETION DEP	1 H: 30.' 2011	1/5 M
A TETRA	ATECH COMPANY							RAWING NO: 2			Page 1 of 1	-011	

Projec	t: Stage 2 PSI							ional District		PROJECT NO BOR	EHOLE	NO.
Location	on: Block J, CR\	WMC		Drilling Co	ontract	tor: D	Orillwe	Il Enterprises		N23101802 - EB	411-04	
Client:	Campbell River	r, BC		Drilling Me	ethod:	Air F	Rotar	/				
SAMP	LE TYPE	DISTURBED	NO RECOVE	RY 🔀 S	PT			A-CASING	SHE	LBY TUBE CORE		
BACK	FILL TYPE	BENTONITE	PEA GRAVEI	_	LOUG	Н		GROUT	DRIL	L CUTTINGS 👯 SAND		
Depth (m)		SOII DESCRIF			SAMPLE TYPE	OSC	SOIL SYMBOL			NOTES & COMMENTS	EBA11-04	Depth (ft)
0	SILT, sandy, trac	ce organics, soft, mo	pist, reddish brown		\Box	ML					41 41	뎩
	SAND, fine grain	ied, loose, homoger	nous, moist, tan colou	red			***					5를
	- Grey at 3.1 m					SW						0
-	SAND trace gra	vel, fine to medium	grained compact		+							3
20	0/ 1115, 11000 gra	voi, into to modium	gramoa, compact				****					65=
	SAND, trace gra	vel, trace silt, satura t, saturated, grey grained, some silt, s				ML SW ML		OGGED BY: MG		COMPLETION DEP	H: 29.	Nowmber 47, 2011 102 102 103 104 105 106 8 107 108 108 109 100
Ê	bo						RI	EVIEWED BY:		COMPLETE: 11/17/2	2011	
A TETRA	TECH COMPANY						DI	RAWING NO: 3		Page 1 of 1		



Page 1 of 3

PROJECT NAME: Campbell River Waste Management Centre

PROJECT NUMBER: 056484

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, BC

HOLE DESIGNATION: MW01-16
DATE COMPLETED: 21 June 2016

DRILLING METHOD: Rotosonic (153 mm)

FIELD PERSONNEL: S. Foster

DRILLING CONTRACTOR: Mud Bay Drilling

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	BOREHOLE			SAMP	PLE
m BGS	STIM HONAL FILE DESCRIPTION & NEWARKS	m	BONEHOLL	H.	VAL	(%	H.
	NORTHING: 5542091 TOP OF RISE EASTING: 331111 GROUND SURFACE		STICKUP 0.80 M	NUMBER	INTERVAL	REC (%)	'N' VALUE
	OL-SILT, with gravel (organic topsoil), loose, silt to fine gravel, dark brown, dry	185.64	5 4 5 4 5 4 5 4				
1	GW-GRAVEL with cobbles, with silt/fine sand, loose, brown, dry			RS-1		100	
2	- silt and sand with cobbles layer (0.3 m) at 1.83m BGS		BENTONITE CHIP AND	RS-2		100	
3	SP-gravelly SAND, medium sand, minor coarse sand, fine to coarse gravel, light grey, dry	183.50	SOIL CUTTINGS 51 mm Ø PVC RISER PIPE				
1	SW/GW-SAND and GRAVEL, with cobbles, fine sand, fine to coarse gravel, cobbles, tight, grey, moist			RS-3		100	
3	SW-gravelly SAND, trace cobble, fine sand (less medium, less coarse), fine gravel (less coarse), light grey dry	180.46	152 mm Ø				
3			BOREHOLE	RS-4		100	
0		175.88					
	SP-SAND, fine sand, light brown, slightly moist			RS-5		100	
1	GM-SILTY SAND and GRAVEL, silt with fine to coarse sand, with fine to coarse gravel, light grey, dry	174.97					
2	SW/GW-SAND and GRAVEL, trace silt, well graded, fine to coarse sand, fine to coarse gravel, grey, moist	174.06					
3	graver, grey, most	* .		RS-6		100	
4							
5	SP-SAND, trace silt, trace gravel, medium to coarse grain sand, fine gravel, brown, moist	171.01					
6	- trace cobble at 16.46m BGS			RS-7		100	
7 8 9			BENTONITE/S CUTTINGS	OIL			
8	SW/GW-SAND and GRAVEL, fine to coarse sand, fine to coarse gravel, trace silt, brown,	167.96	Cornings				
9	moist			RS-8		100	



Page 2 of 3

PROJECT NAME: Campbell River Waste Management Centre

PROJECT NUMBER: 056484

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, BC

HOLE DESIGNATION: MW01-16 DATE COMPLETED: 21 June 2016 DRILLING METHOD: Rotosonic (153 mm)

FIELD PERSONNEL: S. Foster

DRILLING CONTRACTOR: Mud Bay Drilling

DEPTH n BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	BOREHOLE		1	SAMF	
				NUMBER	INTERVAL	REC (%)	'N' VALUE
21	GM-GRAVEL (TILL), with silt/fine sand, fine to coarse gravel, fine sand (less medium/coarse), very dense, clumpy, gravel rounded to subrounded, grey to brown, moist - core through boulder at 21.03m BGS	165.52					
23				RS-9		100	
25				RS-10		100	
26							
28	SP-SAND with gravel, fine to coarse sand, fine gravel, subrounded, brown, grey, moist	157.90		RS-11		100	
29	SW/GW-SAND and GRAVEL trace silt, trace cobbles, fine to coarse sand, fine to coarse gravel, subrounded, brown, moist	156.99	T	RS-12		100	
30	- trace cobbles at 29.26m BGS - becoming wet at 29.87m BGS						
32	- trace cobbles at 31.39m BGS			RS-13		100	
33	- increase in silt, return on water, cloudy at 33.22m BGS						
34	- orange brown, sandy silt layer, 5 cm			RS-14		100	
35	thickness at 34.75m BGS - slow drilling, hard at 35.05m BGS		BENTONITE PELLETS				
37	\$\frac{1}{2}\text{\$\frac{1}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}{2}\text{\$\frac{1}\text{\$\frac{1}						
38			SILICA SAND	RS-15		100	
39	- sandy till with gravel at 39.01m BGS		51 mm Ø 10-SLOT PVC SCREEN				



Page 3 of 3

PROJECT NAME: Campbell River Waste Management Centre

PROJECT NUMBER: 056484

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, BC

HOLE DESIGNATION: MW01-16 DATE COMPLETED: 21 June 2016

FIELD PERSONNEL: S. Foster

DRILLING METHOD: Rotosonic (153 mm)

DRILLING CONTRACTOR: Mud Bay Drilling

EPTH n BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	BOREHOLE			SAM		
11 200				NUMBER	INTERVAL	REC (%)	'N' VALUE	
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59	END OF BOREHOLE @ 42.37m BGS Monitoring well completed in saturated conditions. Initial static water level elevated above normal due to addition of water during drilling. Borehole backfilled with bentonite gravel, and a mixture of soil cuttings and bentonite chip.	143.58	WELL DETAILS Screened interval: 145.10 to 148.15m 40.84 to 37.80m BGS Length: -3.05m Diameter: 51mm Slot Size: 20 Material: SCH. 40 PVC Seal: 149.67 to 151.50m 36.27 to 34.44m BGS Material: BENTONITE GRAVEL Sand Pack: 145.10 to 149.67m 40.84 to 36.27m BGS Material: TARGET FILTER SAND 10/20 Seal: 151.50 to 185.94m 34.44 to 0.00m BGS Material: BENTONITE CHIP AND DRILL CUTTINGS	RS-16		100		



Page 1 of 2

PROJECT NAME: CVRD

PROJECT NUMBER: 056484-02

DRILLING CONTRACTOR: Drillwell

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, British Columbia

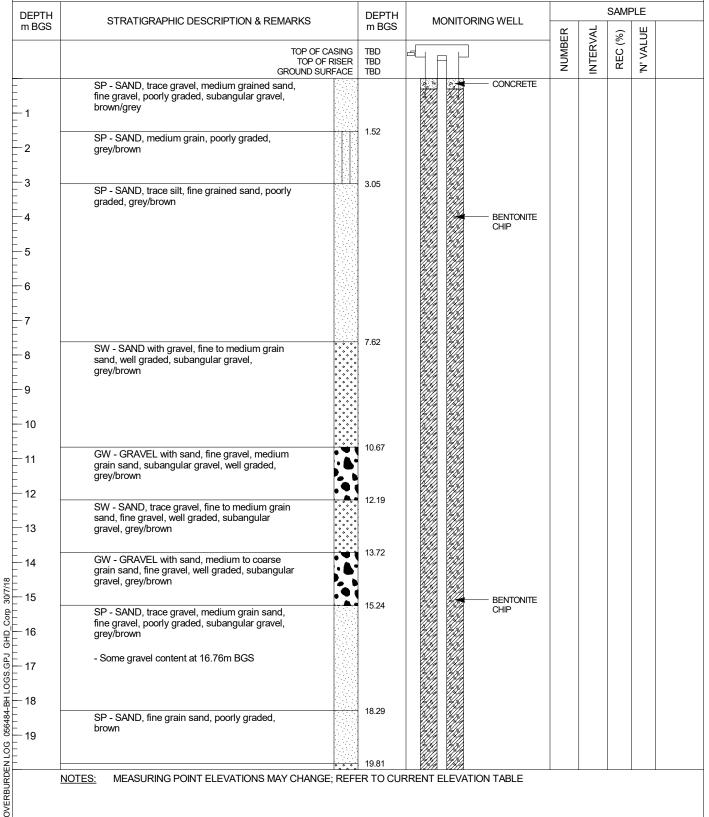
HOLE DESIGNATION: MW02-18

DATE COMPLETED: 25 July 2018

DRILLING METHOD: Air Rotary

FIELD PERSONNEL: M. Dyck/N. Turl

DRILLER: Scott Burrows





Page 2 of 2

PROJECT NAME: CVRD

PROJECT NUMBER: 056484-02

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, British Columbia

MW02-18 HOLE DESIGNATION:

DATE COMPLETED: 25 July 2018

DRILLING METHOD: Air Rotary

FIELD PERSONNEL: M. Dyck/N. Turl

DRILLING CONTRACTOR: Drillwell DRILLER: Scott Burrows

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH m BGS	MONITORING WELL	SAMPLE							
SOB III			ODA III		NUMBER	INTERVAL	REC (%)	'N' VALUE				
21 22 23 24 25 26 27 28	SW - SAND with gravel, fine to medium grain sand, well graded, subangular gravel, grey/brown - No gravel at 22.86m BGS											
29 -	SP - SAND, medium to coarse grain sand, poorly graded, grey/brown		28.96	10-20 SAND								
32												
33	END OF BOREHOLE @ 32.61m BGS	<u> </u>	32.61	WELL DETAILS Screened interval: 30.18 to 31.70m BGS								
34				Length: 1.52m Diameter: 51mm Material: PVC Schedule 40								
- 35				Seal: 0.30 to 29.87m BGS Material: Bentonite chips + 1 bag of								
36				bentonite pellets at ~ 22.86 m bgs. Sand Pack: 29.87 to 32.61m BGS Material: 10-20 Sand								
38												
39												



Page 1 of 2

PROJECT NAME: CVRD

PROJECT NUMBER: 056484-02

HOLE DESIGNATION: DATE COMPLETED: 24 July 2018

CLIENT: Comox Valley Regional District

DRILLING METHOD: Air Rotary

LOCATION: Campbell River, British Columbia

FIELD PERSONNEL: M. Dyck/N. Turl

MW03-18

DRILLING CONTRACTOR: Drillwell

DRILLER: Scott Burrows

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH MONITORING WELL				SAMPLE							
	TOP OF TOP OI	TBD TBD		 1 _B P			INTERVAL	REC (%)	'N' VALUE					
	GROUND SU	JRFACE V////	TBD	5206	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- CONCRETE	NUMBER							
-1 -2 -3 -4 -5 -6 -7	CL - SILTY CLAY with gravel, few sand, fine grained sand, fine gravel, sub-angular gravel, poorly graded, brown			***		— CONCRETE — BENTONITE CHIPS								
- 10	SP - SAND, trace gravel, fine to medium grained sand, fine gravel, subangular gravel, poorly graded, well sorted, brown		9.14											
-11	CL - SILTY CLAY, trace sand, trace fine gravel, fine grained sand, poorly graded, brown		10.67											
- 12	SC - SAND with clay, fine grained sand, poorly graded, low plasticity, brown		12.19			— BENTONITE CHIPS + 1 BAG OF BENTONITE								
- 14	SC - CLAYEY SAND, fine grained sand, poorly graded, brown		13.72			PELLETS AT ~22.86 M BGS								
- 15 - 16 - 17	CL - CLAY with sand, fine grained sand, poorly graded, brown		15.24											
· 18														
			19.81											



Page 2 of 2

PROJECT NAME: CVRD

PROJECT NUMBER: 056484-02

CLIENT: Comox Valley Regional District

LOCATION: Campbell River, British Columbia

MW03-18 HOLE DESIGNATION:

DATE COMPLETED: 24 July 2018

DRILLING METHOD: Air Rotary

FIELD PERSONNEL: M. Dyck/N. Turl

DEPTH STRATIGRAPHIC DESCRIPTION & REMARKS			DEPTH MONITORING WELL			SAMPLE						
m BGS	STRATIGINALLIC DESCRIPTION & REWARKS	m BGS	WONITONING WELL	NUMBER	INTERVAL	REC (%)	'N' VALUE					
21	GW - GRAVEL with sand, medium to coarse grain sand, fine subangular gravel, well graded, grey	21.34		_	1		-					
22	SW - SAND, trace gravel, medium to coarse grained sand, fine to medium gravel, subangular gravel, brown/grey	*										
23	SW/GW - SAND and GRAVEL, medium to coarse grained sand, fine to medium gravel, subangular gravel, brown/grey	22.86										
24	- Dominated by gravel, sand primarily coarse. Gravel with sand. at 24.38m BGS											
25			10-20 SAND									
26	- Dominated by sand, trace gravel. at 25.91m BGS END OF BOREHOLE @ 26.52m BGS	26.52	WELL DETAILS									
27			Screened interval: 24.99 to 26.52m BGS Length: 1.53m									
29			Diameter: 51mm Material: PVC Schedule 40 Seal:									
30			0.30 to 24.69m BGS Material: Bentonite chips + 1 bag of bentonite pellets at ~ 22.86 m bgs. Sand Pack:									
31			24.53 to 26.52m BGS Material: 10-20 Sand									
32												
33												
34												
35												
36												
37												
38												
39												
NC	<u>OTES:</u> MEASURING POINT ELEVATIONS MAY CHANGE	; REFER TO CUR	RENT ELEVATION TABLE	-								



Page 1 of 4

PROJECT NAME: CRWMC 2019 DRILLING PROGRAM

PROJECT NUMBER: 056484-19

CLIENT: COMOX VALLEY REGIONAL DISTRICT

LOCATION: CAMPBELL RIVER, BC

HOLE DESIGNATION: MW04-19

DATE COMPLETED: 22 October 2019

DRILLING METHOD: Air Rotary
FIELD PERSONNEL: N.Turl

SAMPLE DEPTH STRATIGRAPHIC DESCRIPTION & REMARKS **DEPTH** MONITORING WELL m BGS INTERVAL NUMBER (%) REC SAND, trace gravel, fine to medium grained sand, fine and coarse grained gravel, light brown, little to no moisture CEMENT 10/20 FILTER SAND 0.5 BENTONITE CHIPS & PELLETS 1.0 - 1.5 2.0 - 2.5 3.0 3.05 SAND, fine to medium grained, light brown and grey, little to no moisture 3.5 4.0 4.5 - 5.0 5.5 6.0 SAND, fine to medium grained, trace coarse grained sand, grey/brown, little to no moisture 6.5 - 7.0 12/3/20 - 7.5 - 8.0 056484-19-VN.GPJ G - 8.5 9.0 - increase of coarse sand content at 9.14m bgs - 9.5 OVERBURDEN LOG NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE STATIC WATER LEVEL 24.850m BTOR October 23, 2019



Page 2 of 4

PROJECT NAME: CRWMC 2019 DRILLING PROGRAM

PROJECT NUMBER: 056484-19

CLIENT: COMOX VALLEY REGIONAL DISTRICT

LOCATION: CAMPBELL RIVER, BC

HOLE DESIGNATION: MW04-19

DATE COMPLETED: 22 October 2019

DRILLING METHOD: Air Rotary

FIELD PERSONNEL: N.Turl

10.5 11.0				HER.	VAL	(%)	
				NUMBER	INTERVAL	REC (%)	
11.0	SAND, trace gravel, fine to medium grained		10.67				
11.5	sand, fine and coarse grained gravel, light brown, little to no moisture						
12.0			40.40				
12.5	SAND, fine to medium grained, light brown and grey, little to no moisture		12.19				
13.0		`.`					
13.5	SAND, fine to medium grained, trace coarse		13.72				
14.0	grained sand, grey/brown, little to no moisture						
14.5 15.0							
15.5	SAND, few gravel, fine to coarse grained sand, fine grained gravel, dark brown, little to no moisture		15.24				
16.0							
16.5	SAND, fine grained, trace medium grained sand,		16.76				
17.0	light brown, slightly moist						
17.5							
18.0	SILTY SAND, fine grained sand, brown		18.29				
19.0	Began using water to drill, could not determine moisture						
19.5							



Page 3 of 4

PROJECT NAME: CRWMC 2019 DRILLING PROGRAM

PROJECT NUMBER: 056484-19

CLIENT: COMOX VALLEY REGIONAL DISTRICT

LOCATION: CAMPBELL RIVER, BC

HOLE DESIGNATION: MW04-19

DATE COMPLETED: 22 October 2019

DRILLING METHOD: Air Rotary
FIELD PERSONNEL: N.Turl

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS			MONITORING WELL	NUMBER INTERVAL REC (%)						
ШВСС		DEP					REC (%)				
-20.5 -21.0 -21.5 -22.0 -22.5 -23.0 -23.5	SAND, fine to medium grained, trace coarse grained sand, grey/brown SAND, fine to medium grained, brown	21.34									
24.0 	- trace coarse sand at 25.91m bgs for 1.52m	25.91	j								
26.5 											
28.0 											
29.0	SILTY SAND, fine grained sand, grey/brown, increase in silt content with depth	28.96	5								



Page 4 of 4

PROJECT NAME: CRWMC 2019 DRILLING PROGRAM

PROJECT NUMBER: 056484-19

CLIENT: COMOX VALLEY REGIONAL DISTRICT

LOCATION: CAMPBELL RIVER, BC

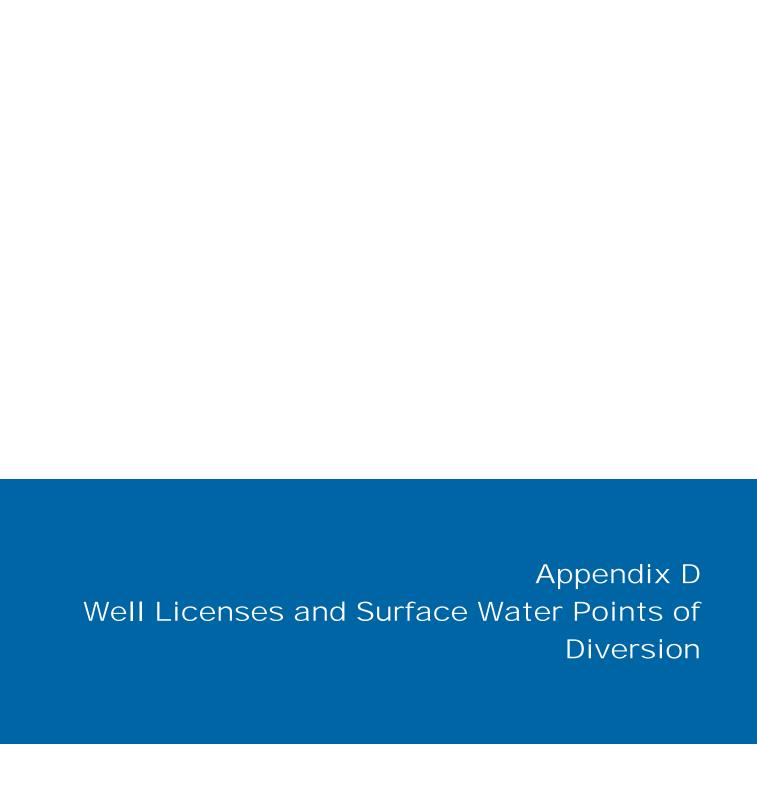
HOLE DESIGNATION: MW04-19

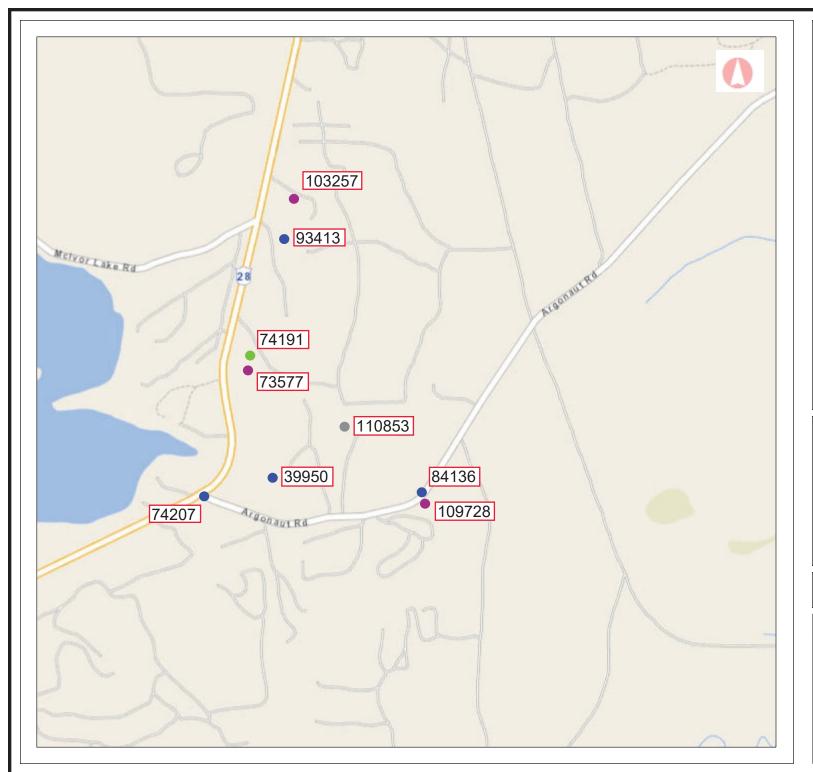
DATE COMPLETED: 22 October 2019

DRILLING METHOD: Air Rotary

FIELD PERSONNEL: N.Turl

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE						
m BGS				NUMBER	INTERVAL	REC (%)				
-30.5 -31.0 -31.5 -32.0 -32.5 -33.0 -33.5 -34.0 -35.0 -35.5 -36.0 -36.5 -37.0	END OF BOREHOLE @ 35.36m BGS	35.36	WELL DETAILS Screened interval: 32.31 to 35.36m BGS Length: 3.05m Diameter: 51mm Slot Size: 0.010 Material: SCH. 40 PVC Seal: 0.61 to 32.00m BGS Material: BENTONITE CHIPS Sand Pack: 32.00 to 35.36m BGS Material: 10/20 FILTER SAND	WNN	INTER	REC				
38.5										
-38.0 -38.5 -39.0 -39.5										
<u> </u>	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFI		RRENT ELEVATION TABLE 24.850m BTOR October 23, 2019)	<u> </u>	I.	<u> </u>			







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Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary

Sphere

Key Map of British Columbia



Chrome 74 is not supported by the Groundwater Wells and Aquifers applicaon. We recommend using: Chrome, Firefox or Safari. Read more or ignore



COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 39950 Well Identification Plate Number: **Owner Name: ISLAND READY MIX**

Intended Water Use: Commercial and Industrial

Well Status: New Well Class: **Well Subclass: Aquifer Number: 975** **Observation Well Number: Observation Well Status:**

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

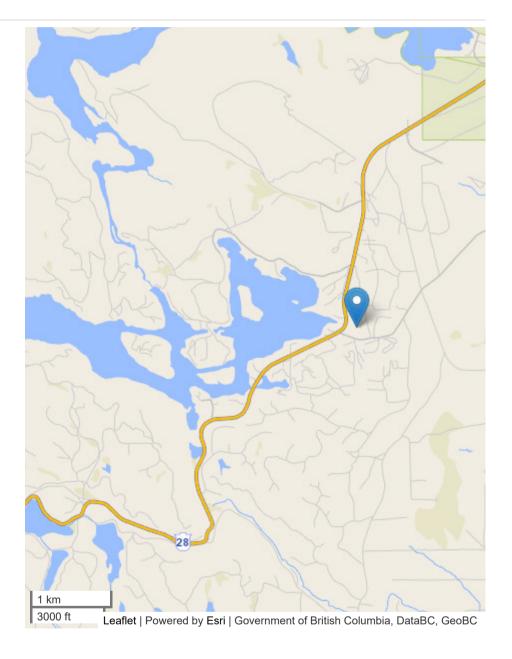
Street Address: GOLD RIVER HIGHWAY NEAR DUMP

Town/City: CAMPBELL RIVER

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	85
Township	
Range	
Land District	51
Property Identification Description (PID)	

Description of Well Location:



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Longitude: -125.354453 UTM Northing: 5542131 **UTM Easting:** 331298

Zone: 10 Coordinate Acquisition Code: (50 m

accuracy) Digitized from 1:20,000

mapping

Well Activity

Activity	↓ Work Start Date	\$ Work End Date	\$	Drilling Company	1	Date Entered	\$
		There has been no activity rela	ited	to this well.			

https://apps.nrs.gov.bc.ca/gwells/well/39950 1/3

Read more or ignore

Construction	Construction	Aiteration	Alteration	Decommission	Decommission	
1978-06-26	1978-06-26					

Well Completion Data

Total Depth Drilled:

Static Water Level (BTOC): 7.00 feet

Well Cap:

Finished Well Depth: 55.00 feet

Estimated Well Yield: 0.000 USGPM

Well Disinfected Status: Not Disinfected

Final Casing Stick Up: Depth to Bedrock: Artesian Flow:

Drilling Method: Other

Ground elevation:

Artesian Pressure:
Method of determining elevation: Unknown

Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0.00	10.00	silty gravel						
10.00	55.00	sand & gravel						
55.00	55.00	sand						

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe
			There are no records t	o show		

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Backfill Depth:

Surface Seal Thickness: Surface Seal Depth:

Liner Details

Liner Material:

Liner Thickness:

Liner Diameter: Liner from:

Liner Thickness
Liner to:

Liner perforations

From

То

There are no records to show

Screen Details

Intake Method:

Installed Screens

Type: Material: Opening:

Bottom:

From To Diameter Assembly Type Slot Size

There are no records to show

Well Development

Developed by:

Development Total Duration:

Well Yield

No well yield data available.

Well Decommission Information

Reason for Decommission:

Method of Decommission:

Backfill Material:

Sealant Material:

Decommission Details:

Alternative Specs Submitted: No

Documents

• WTN 39950_Well Record.pdf

Disclaimer

The information provided should not be used as a basis for making financial or any other commitments. The Government of British Columbia accepts no liability for the accuracy, availability, suitability, reliability, usability, completeness or timeliness of the data or graphical depictions rendered from the data.



COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 73577 Well Identification Plate Number: **Owner Name: FR FRANZEN CONSTUCTI Intended Water Use:** Private Domestic

Well Status: New Well Class: Unknown Well Subclass: **Aquifer Number: 975**

Observation Well Number: Observation Well Status:

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

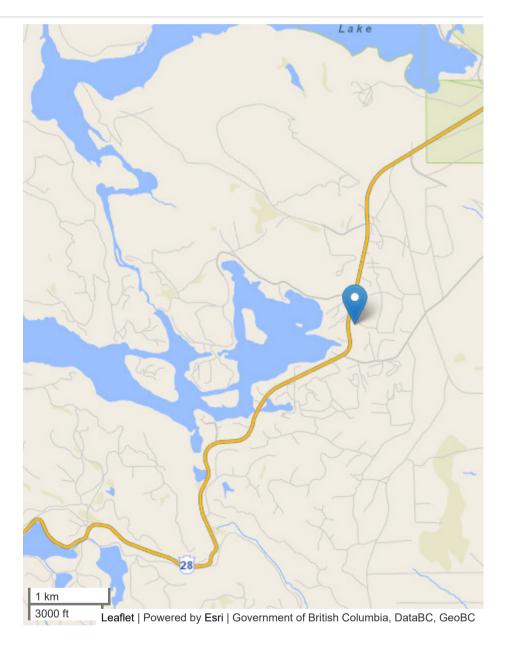
Location Information

Street Address: Town/City:

Legal Description:

Lot	7
LOT	/
Plan	31913
District Lot	
Block	
Section	
Township	
Range	
Land District	51
Property Identification Description (PID)	001125745

Description of Well Location: 4 MILES N OF C R ON GOLD R RD



Geographic Coordinates - North American Datum of 1983 (NAD 83)

UTM Easting: 331232 **Zone:** 10

Longitude: -125.355519 UTM Northing: 5542462 **Coordinate Acquisition Code:**

unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in

center of parcel

Well Activity

Activity 1	Work Start Date	\$	Work End Date	>	Drilling Company	\$	Date Entered	\$
			There has been no activity relate	ed	to this well.			

Read more or ignore

Construction	Construction	Alteration	Aiteration	Decommission	Decommission	
1981-03-09						

Well Completion Data

Total Depth Drilled:

Static Water Level (BTOC): 120.00 feet

Well Cap:

Finished Well Depth: 149.00 feet

Estimated Well Yield: 0.000 USGPM

Well Disinfected Status: Not Disinfected

Final Casing Stick Up: Depth to Bedrock:

Artesian Flow:
Artesian Pressure:

Drilling Method: Other **Orientation of Well:** VERTICAL

Ground elevation:

Method of determining elevation: Unknown

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
142.00	149.00	WATER BEARING SAND & GRAVEL						
138.00	142.00	WHITE WATER BEARING SAND						
132.00	138.00	BLUE WATER BEARING GRAVEL						
117.00	132.00	BLUE WATER BEARING SAND						
0.00	117.00	BLUE GRAVEL						

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe			
There are no records to show									

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Backfill Depth:

Surface Seal Thickness: Surface Seal Depth:

Liner Details

Liner Material:

Liner Thickness:

Liner perforations

From

То

Liner Diameter: Liner from:

Liner to:

There are no records to show

Screen Details

Intake Method:

Installed Screens

Type: Material: Opening:

Bottom:

From To Diameter Assembly Type Slot Size

There are no records to show

Well Development

Developed by:

Development Total Duration:

Well Yield

No well yield data available.

_		_
Decomm		. Dataila
Decomm	niccion	i i jetalic

Comments

STEEL CASING, CONTINUOUS, METHOD OF DRILLING = DRILLED

Alternative Specs Submitted: No

Documents

• WTN 73577_Well Record.pdf

Disclaimer

The information provided should not be used as a basis for making financial or any other commitments. The Government of British Columbia accepts no liability for the accuracy, availability, reliability, reliability, completeness or timeliness of the data or graphical depictions rendered from the data.



COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 74191 Well Identification Plate Number: Owner Name: AL & SONS BACKHOE & Intended Water Use: Other

Well Status: New Well Class: Unknown Well Subclass: **Aquifer Number:** 975

Observation Well Number: Observation Well Status:

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

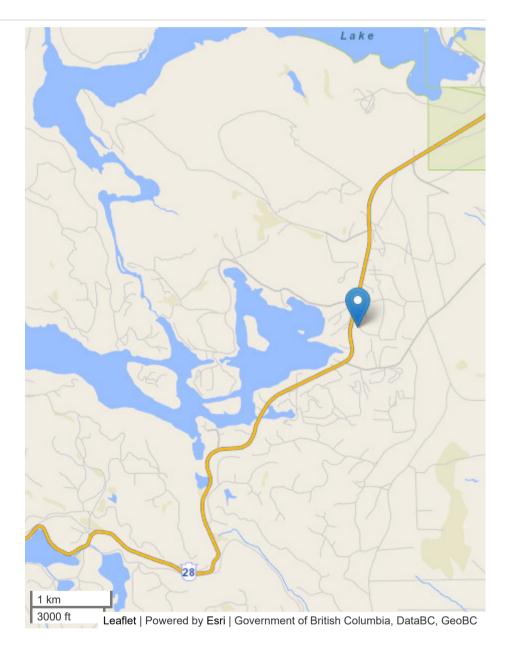
Street Address: GOLD RIVER HIGHWAY

Town/City:

Legal Description:

Lot	2
Plan	47695
District Lot	85
Block	
Section	
Township	
Range	
Land District	51
Property Identification Description (PID)	012474266

Description of Well Location:



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Latitude: 50.010962 **UTM Easting:** 331238 **Zone:** 10

Longitude: -125.355456 UTM Northing: 5542508 **Coordinate Acquisition Code:** unknown, accuracy based on parcel

size) ICF cadastre, poor or no location sketch, arbitrarily located in

center of parcel

Well Activity

Activity	\$ Work Start Date	\$ Work End Date	\$	Drilling Company	\$	Date Entered	\$
		There has been no activity relat	ted	to this well.			

Read more or ignore

Construction	Construction	Aiteration	Alteration	Decommission	Decommission	
1991-10-23	1991-10-23					

Well Completion Data

Total Depth Drilled:

Static Water Level (BTOC): 80.00 feet

Well Cap:

Finished Well Depth: 123.00 feet

Estimated Well Yield: 100.000 USGPM

Well Disinfected Status: Not Disinfected

Final Casing Stick Up: Depth to Bedrock:

Artesian Flow:

Drilling Method: Other

Ground elevation:

Artesian Pressure: Method of determining elevation: Unknown **Orientation of Well: VERTICAL**

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
122.00	124.00	WATER BEARING SAND & GRAVEL						
115.00	122.00	ROCKS & SAND						
100.00	125.00	WATERBEARING SAND & GRAVEL						
85.00	100.00	WATER BEARING SAND & GRAVEL						
75.00	85.00	BROWN SAND & GRAVEL						
50.00	75.00	BROWN SAND & GRAVEL						
20.00	50.00	GREY SAND & GRAVEL						
0.00	20.00	GREY SAND & GRAVEL						

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	sing Material Diameter		Drive Shoe
			There are no records to	o show		

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Backfill Depth:

Surface Seal Thickness: Surface Seal Depth:

Liner Details

Liner Material:

Liner perforations

From

Liner Diameter:

Liner Thickness:

То

Liner from:

Liner to:

There are no records to show

Screen Details

Intake Method:

Installed Screens

Type: Material: Opening: **Bottom:**

From То Diameter **Assembly Type** Slot Size There are no records to show

Well Development

Developed by:

Development Total Duration:

Read more or ignore

Well Decommission Information

Reason for Decommission: Sealant Material: Method of Decommission:

Backfill Material:

Decommission Details:

Comments

STEEL CASING, 0.0 TO 123.2, 250 THICK, A53 LBS, CONTINUOUS, STAINLESS STEEL, PUMP TEST RATE 100 USGM, 80 FT AFTER 24 HRS METHOD OF DRILLING = DRILLED

Alternative Specs Submitted: No

Documents

• WTN 74191_Well Record.pdf

Disclaimer

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 74207
Well Identification Plate Number:
Owner Name: M & S FOREST PRODUCT
Intended Water Use: Commercial and Industrial

Well Status: New Well Class: Unknown Well Subclass: Aquifer Number: 975

Observation Well Number: Observation Well Status:

Alternative specs submitted: No

 ${\bf Environmental\ Monitoring\ System\ (EMS)\ ID:}$

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

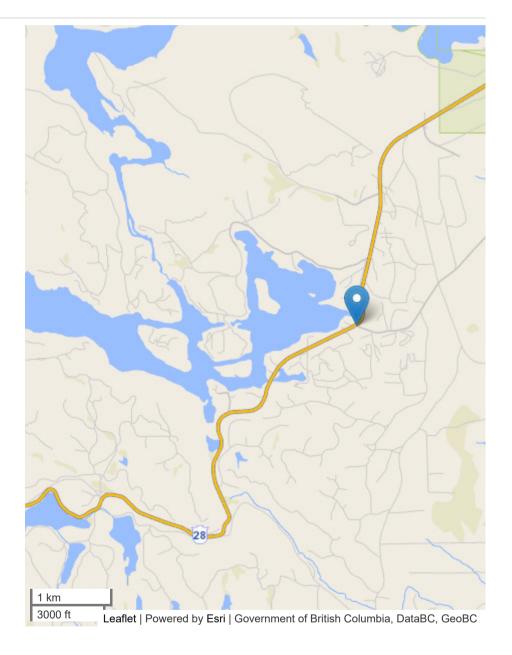
Street Address: GOLD RIVER HIGHWAY

Town/City:

Legal Description:

Lot	
Plan	
District Lot	85
Block	
Section	
Township	
Range	
Land District	51
Property Identification Description (PID)	

Description of Well Location: NEAR UPLAND EXCAVATING



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Latitude: 50.007081 **UTM Easting:** 331083

Zone: 10

Longitude: -125.357429 UTM Northing: 5542081 Coordinate Acquisition Code:

(unknown, accuracy based on parcel size) No ICF cadastre, poor or no location sketch; site located in center

of primary parcel

Well Activity

Activity 1	Work Start Date	\$	Work End Date	>	Drilling Company	\$	Date Entered	\$
			There has been no activity relate	ed	to this well.			

Read more or ignore

Construction	Construction	Aiteration	Alteration	Decommission	Decommission	
1987-05-01	1987-05-01					

Well Completion Data

Total Depth Drilled:

Static Water Level (BTOC): 85.00 feet

Well Cap:

Finished Well Depth: 138.00 feet

Estimated Well Yield: 20.000 USGPM

Well Disinfected Status: Not Disinfected

Final Casing Stick Up:

Artesian Flow:

Drilling Method: Other

Depth to Bedrock: Ground elevation: Artesian Pressure:

Orientation of Well: VERTICAL

Method of determining elevation: Unknown

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
100.00	138.00	WB SAND						
93.00	100.00	BROWN WB SAND & GRAVEL						
0.00	93.00	BROWN SAND & GRAVEL						

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe
			There are no records t	o show		

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Backfill Depth:

Surface Seal Thickness: Surface Seal Depth:

Liner Details

Liner Material: Liner Diameter:

Liner from:

Liner Thickness:

Liner to:

Liner perforations
From

То

There are no records to show

Screen Details

Intake Method:

Installed Screens

Type: Material: Opening:

Bottom:

From To Diameter Assembly Type Slot Size

There are no records to show

Well Development

Developed by:

Development Total Duration:

Well Yield

No well yield data available.

Well Decommission Information

Reason for Decommission: Sealant Material: Method of Decommission:

Backfill Material:

Decommission Details:

Alternative Specs Submitted: No

Documents

• WTN 74207_Well Record.pdf

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 84136
Well Identification Plate Number:
Owner Name: CAMPBELL RIVER LANDFILL
Intended Water Use: Commercial and Industrial

Well Status: New Well Class: Unknown Well Subclass: Aquifer Number: 975

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

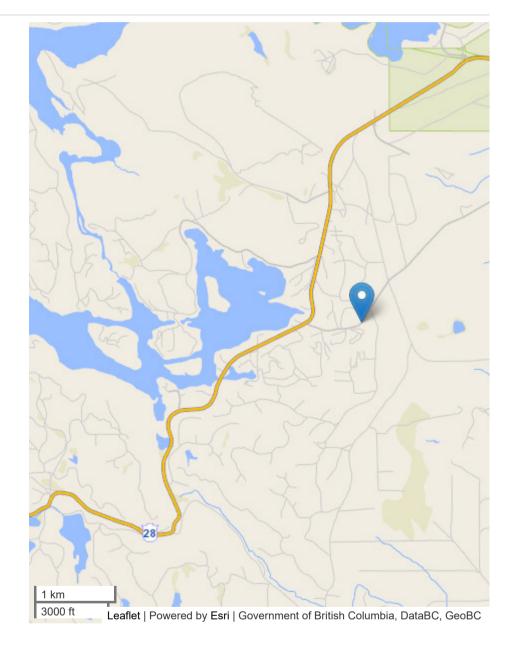
Street Address: 6700 ARGONAUT RD

Town/City:

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	
Township	
Range	
Land District	
Property Identification Description (PID)	

Description of Well Location:



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Latitude: 50.007172 **UTM Easting:** 331755

Zone: 10

Longitude: -125.348054 UTM Northing: 5542070 Coordinate Acquisition Code:

unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in

center of parcel

Well Activity

Activity	\$ Work Start Date	\$ Work End Date	\$	Drilling Company	\$	Date Entered	\$
		There has been no activity relat	ted	to this well.			

Read more or ignore

Construction	Construction	Aiteration	Alteration	Decommission	Decommission	
2004-07-05	2004-07-05					

Well Completion Data

Total Depth Drilled: 224.00 feet

Finished Well Depth: 215.00 feet

Final Casing Stick Up: Depth to Bedrock: Ground elevation: Static Water Level (BTOC):

Estimated Well Yield: 75.000 USGPM

Artesian Flow:
Artesian Pressure:

Method of determining elevation: Unknown

Well Cap: WELDED LID

Well Disinfected Status: Not Disinfected

Drilling Method: Air Rotary **Orientation of Well:** VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0.00	13.00	COARSE GRAVEL						
13.00	36.00	COARSE SAND & GRAVEL						
36.00	42.00	COARSE GRAVEL						
42.00	87.00	BROWN SAND						
87.00	130.00	BROWN SILTY SAND & SOME GRAVEL						
130.00	142.00	CLEAN BROWN COARSE SAND						
142.00	150.00	SLIGHTLY SILTY SAND & GRAVEL						
150.00	220.00	COARSE SAND & GRAVEL (WB)						
220.00	224.00	MORE SAND & SILTYER BROWN WATER						

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe

Surface Seal and Backfill Details

Surface Seal Material:

Surface Seal Installation Method:

Surface Seal Thickness: Surface Seal Depth: **Backfill Material Above Surface Seal:**

Backfill Depth:

Liner Details

Liner Material:

Liner Diameter: Liner from: Liner Thickness: Liner to: **Liner perforations**

From To

There are no records to show

Screen Details

Intake Method:

Type: Telescope **Material:** Stainless

Steel
Opening:
Bottom:

Installed Screens

From	То	Diameter	Assembly Type	Slot Size
206.30 ft	215.00 ft	5.50		200.00

Well Development

Developed by:

Development Total Duration:

Read more or ignore

Well Decommission Information

Reason for Decommission: Sealant Material: Decommission Details: Method of Decommission:

Backfill Material:

Comments

CHLORINE MEASUREMENTS TAKEN AT GROUND LEVEL

Alternative Specs Submitted: No

Documents

• WTN 84136_Well Construction.pdf

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 93413

Well Identification Plate Number: 12472
Owner Name: EMCON (MINISTRY OF HIGHWAYS)

Intended Water Use: Commercial and Industrial

Well Status: Alteration
Well Class: Water Supply
Well Subclass: Non Domestic

Aquifer Number: 975

Observation Well Number: Observation Well Status:

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

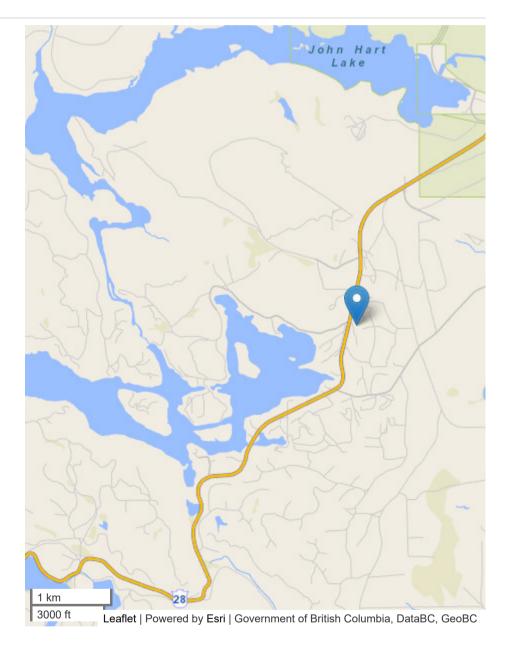
Street Address: 7025 GOLD RIVER HIGHWAY

Town/City:

Legal Description:

Lot	
Plan	
District Lot	85
Block	
Section	
Township	
Range	
Land District	47
Property Identification Description (PID)	

Description of Well Location: BETWEEN BRINE TANK @ SHOP, SE PORTION OF PROPERTY



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Latitude: 50.014176 Longito
UTM Easting: 331355 UTM N

Zone: 10

Longitude: -125.35398 **UTM Northing:** 5542862

Coordinate Acquisition Code: (10 m accuracy) ICF cadastre and good

location sketch

Well Activity

Activity	\$ Work Start Date	\$ Work End Date	ſ	Drilling Company	\$ Date Entered	\$
		There has been no activity relate	d١	to this well.		

Read more or ignore

Construction	Construction	Aiteration	Aiteration	Decommission	Decommission
		2005-12-15	2005-12-15		

Well Completion Data

Total Depth Drilled: 26.00 feet

Finished Well Depth: 180.00 feet Final Casing Stick Up: 24.000 inches

Depth to Bedrock: Ground elevation:

Static Water Level (BTOC): 159.00 feet Estimated Well Yield: 10.000 USGPM

Artesian Flow:
Artesian Pressure:

Method of determining elevation: Unknown

Well Cap: PITLESS UNIT & CAP

Well Disinfected Status: Not Disinfected

Drilling Method: Cable Tool **Orientation of Well:** VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
160.00	178.00	GRAVEL	medium					
178.00	184.00						FINER & SANDIER AS GOING DEEPER	
184.00	187.00		silty		brown			
187.00	188.00		silty		brown		VERY SILTY	

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe
			There are no reco	ords to show		

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Surface Seal Thickness: Surface Seal Depth: Backfill Depth:

Liner Details

Liner Material:

Liner Diameter: Liner from: Liner Thickness: Liner to: Liner perforations

From To

There are no records to show

Screen Details

Intake Method: Type: Telescope

Material: Stainless

0---

Opening: Continuous

Slot

Bottom: Other

Installed Screens

From	То	Diameter	Assembly Type	Slot Size
180.00 ft	182.00 ft	5.00	RISER_PIPE	
182.00 ft	186.00 ft	5.00	K_PACKER	12.00

Well Development

Developed by:

Development Total Duration:

Well Yield

No well yield data available.

_		_
Decomm		. Dataila
Decomm	niccion	i i jetalic

Comments

MEASUREMENTS FROM GROUND LEVEL. RECOMMENDED PUMPING RATE: 10 USGPM.

Alternative Specs Submitted: No

Documents

• WTN 93413_Well Record.pdf

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 103257

Well Identification Plate Number: 34915

Owner Name: TIM FLUTER (CONTACT) CAMPBELL

RIVER MOTOCROSS ASSOCIATION

Intended Water Use: Private Domestic

Well Status: New

Well Class: Water Supply Well Subclass: Domestic

Aquifer Number: 975

Observation Well Number:

Observation Well Status:

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

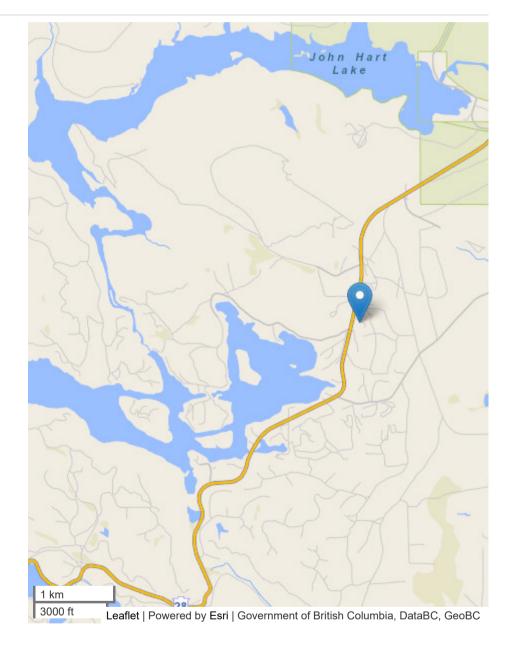
Location Information

Street Address: GOLD RIVER HIGHWAY
Town/City: CAMPBELL RIVER

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	
Township	
Range	
Land District	
Property Identification Description (PID)	

 $\textbf{Description of Well Location:} \ \mathsf{NOT} \ \mathsf{PROVIDED}$



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Latitude: 50.015273 **UTM Easting:** 331386

Zone: 10

Longitude: -125.3536 UTM Northing: 5542983

Coordinate Acquisition Code: (10 m accuracy) Handheld GPS with accuracy of +/- 10 metres

Well Activity

Activity	Work Start Date	\$ Work End Date	Drilling Company	\$ Date Entered \$	
		There has been no activity rela	ted to this well.		

Read more or ignore

Construction	Construction	Aiteration	Alteration	Decommission	Decommission	
2010-08-18	2010-08-20					

Well Completion Data

Total Depth Drilled: 240.00 feet

Final Casing Stick Up: 30.000 inches

Depth to Bedrock: Ground elevation: 599.00 Static Water Level (BTOC): 158.00 feet Estimated Well Yield: 50.000 USGPM

Artesian Flow:

Artesian Pressure:

Method of determining elevation: GPS

Well Cap: SIMPLE

Well Disinfected Status: Disinfected

Drilling Method: Air Rotary **Orientation of Well:** VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0.00	170.00	SAND & GRAVEL			brown			
170.00	185.00				brown			
185.00	240.00	WATER-BEARING MEDIUM GRAINED SAND			brown			

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe	
0.00	231.17		Steel	6.000	0.219	Installed	

Surface Seal and Backfill Details

Surface Seal Material: Bentonite clay and cement

mixture

Surface Seal Installation Method: Poured

Surface Seal Thickness: 1.00 Surface Seal Depth: **Backfill Material Above Surface Seal:**

Backfill Depth:

Liner Details

Liner Material:

Liner Diameter: Liner from: Liner Thickness: Liner to: Liner perforations

From To

There are no records to show

Screen Details

Intake Method: Screen

Type: Telescope

Material: Stainless

Steel

Opening: Continuous

Slot

Bottom: Other

Installed Screens

From	То	Diameter	Assembly Type	Slot Size
230.17 ft	234.58 ft	5.00	SCREEN	20.00
230.17 ft	ft	5.00	K_PACKER	
234.58 ft	239.00 ft	5.00	SCREEN	15.00

Well Development

Developed by:

Development Total Duration: 5.00 hours

Well Yield

No well yield data available.

Decommis	sion	Deta	ils:
----------	------	------	------

Comments

SCREEN BOTTOM: BLANK. BAILED 10 GPM DREW 1' - DRAWDOWN AVAILABLE 90'.

Alternative Specs Submitted: No

Documents

• WTN 103257_Well Construction.pdf

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 109728 Well Identification Plate Number: 42401 **Owner Name: AL+SONS EXCAVATING Intended Water Use:** Private Domestic

Well Status: New Well Class: Water Supply Well Subclass: Domestic **Aquifer Number:**

Observation Well Number: Observation Well Status: Environmental Monitoring System (EMS) ID: Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

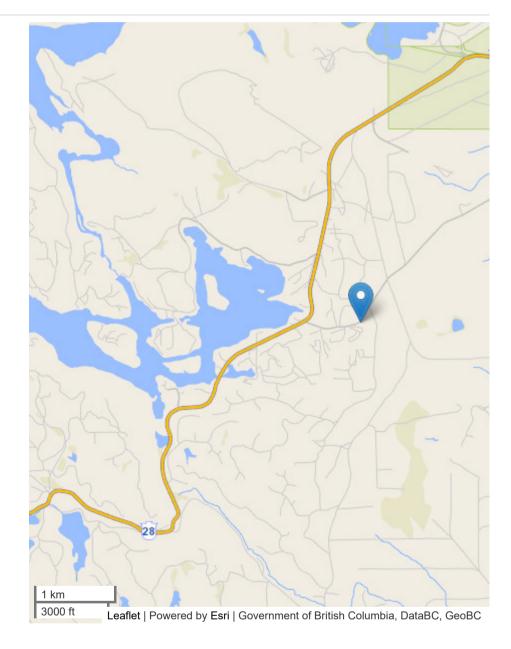
Location Information

Street Address: 6700 ARGONAUT ROAD Town/City: CAMPBELL RIVER

Legal Description:

Lot	85
Plan	
District Lot	
Block	В
Section	
Township	
Range	
Land District	51
Property Identification Description (PID)	

Description of Well Location: NOTHING RECORDED



Geographic Coordinates - North American Datum of 1983 (NAD 83)

UTM Easting: 331760

Zone: 10

Longitude: -125.347972 UTM Northing: 5542041

Coordinate Acquisition Code: (10 m accuracy) Handheld GPS with accuracy of +/- 10 metres

Well Activity

Activity	y	Work Start Date	Work End Date	Drilling Company	Date Entered	\$
			There has been no activity related	d to this well.		

Read more or ignore

Construction	Construction	Aiteration	Aiteration	Decommission	Decommission
2015-01-14	2015-01-15				

Well Completion Data

Total Depth Drilled: 216.00 feet Finished Well Depth: 208.00 feet

Final Casing Stick Up: 20.000 inches Depth to Bedrock:

Ground elevation: 520.00

Static Water Level (BTOC): 110.00 feet Estimated Well Yield: 50.000 USGPM

Artesian Flow:
Artesian Pressure:

Method of determining elevation: GPS

Well Cap: WELDED LID

Well Disinfected Status: Disinfected

Drilling Method: Air Rotary **Orientation of Well:** VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0.00	8.00	GRAVEL AND SILTY SANDY			brown	Medium		
8.00	14.00	GRAVEL			brown	Medium	ZONE WOOD	
14.00	72.00	GRAVEL, SANDY			brown	Medium	LOOSE	
72.00	110.00	SAND,SILTY.			brown	Medium	SILT LAYERS AND GRAVEL LAYERS	
110.00	144.00	SAND			brown	Medium	CLEAN, LOOSE	
144.00	156.00	GRAVEL			brown	Medium	WB,COARSE CLEAN	
156.00	209.00	SAND MED FINE			brown	Medium	WB,CLEAN	
209.00	216.00	SAND,SILTY			brown	Medium	WB,FINE	

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe
0.00	16.00	Steel Removed		10.000		Not Installed
0.00	216.00		Steel	6.000	0.219	Installed

Surface Seal and Backfill Details

Surface Seal Material: Bentonite clay
Surface Seal Installation Method: Poured

Surface Seal Thickness: 2.00 Surface Seal Depth: **Backfill Material Above Surface Seal:**

Backfill Depth:

Liner Details

Liner Material: Liner Diameter:

Liner from:

Liner Thickness: Liner to: Liner perforations

From To

There are no records to show

Material: Stainless				, , ,	
	107.00 ft	100 00 6	F 00	N DICED	
Steel	197.00 ft	199.00 ft	5.00	K_RISER	
Opening: Continuous					
	199.00 ft	203.60 ft	5.00	SCREEN	15.00
Slot					
Bottom: Plug	202 60 ft	200 00 ft	F 00	SCREEN	12.00
22	203.60 ft	208.00 ft	5.00	SCREEN	12.00

Well Development

Developed by: Development Total Duration: 3.00 hours

Well Yield

No well yield data available.

Well Decommission Information

Reason for Decommission: Sealant Material:

Decommission Details:

Method of Decommission: Backfill Material:

Comments

EWELLS SUBMISSION

Alternative Specs Submitted: No

Documents

No additional documentation available for this well.

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COLUMBIA Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 110853 Well Identification Plate Number:

Owner Name: COMOX VALLEY REGIONAL DISTRICT

Intended Water Use:

Well Status: Closure Well Class: Monitoring Well Subclass: Permanent **Aquifer Number:**

Observation Well Number: Observation Well Status:

Environmental Monitoring System (EMS) ID:

Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

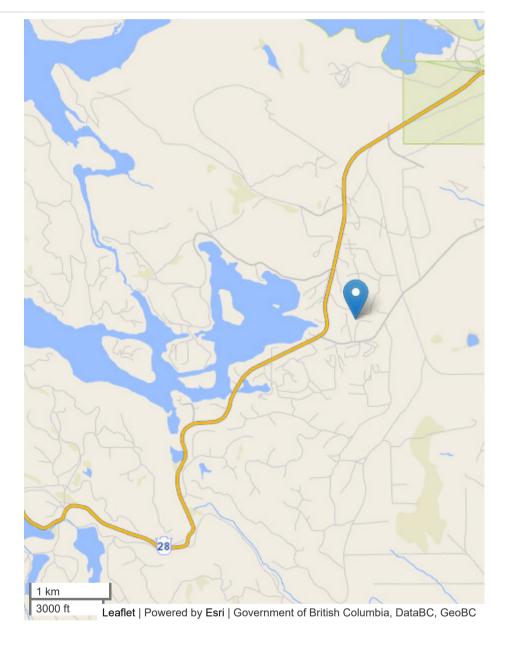
Location Information

Street Address: ARGONAUT ROAD Town/City: CAMPBELL RIVER

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	
Township	
Range	
Land District	
Property Identification Description (PID)	

Description of Well Location: CLOSURE OF 2" MONITORING WELL



Geographic Coordinates - North American Datum of 1983 (NAD 83)

Longitude: -125.351395 **Latitude:** 50.008985 **UTM Easting:** 331522 UTM Northing: 5542279

Zone: 10

Coordinate Acquisition Code: (10 m accuracy) Handheld GPS with accuracy of +/- 10 metres

Well Activity

1	Activity	\$ Work Start Date	\	Work End Date	,	Drilling Company	\$	Date Entered	\$
				There has been no activity related	ed	to this well.			

Read more or ignore

Construction	Construction	Alteration	Alteration	Decommission	Decommission	
				2013-06-21	2013-06-21	

Well Completion Data

Total Depth Drilled:

Static Water Level (BTOC):

Well Cap:

Finished Well Depth:

Estimated Well Yield:

Well Disinfected Status: Not Disinfected

Final Casing Stick Up: Depth to Bedrock:

Artesian Flow:
Artesian Pressure:

Drilling Method: Air Rotary **Orientation of Well:** VERTICAL

Ground elevation:

Method of determining elevation: Unknown

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
							FILLED 2" WELL BORE WITH BENTONITE-CEMENT GROUT	

Casing Details

From (ft)	To (ft)	Casing Type	Casing Material	Diameter	Wall Thickness	Drive Shoe	
			There are no records t	o show			

Surface Seal and Backfill Details

Surface Seal Material:

Backfill Material Above Surface Seal:

Surface Seal Installation Method:

Surface Seal Thickness: Surface Seal Depth: Backfill Depth:

Liner Details

Liner Material: Liner Diameter:

Liner Thickness:

nickness:

Liner from: Liner to:

Liner perforations

From To

There are no records to show

Screen Details

Intake Method:

Installed Screens

Type: Material: Opening:

Bottom:

From To Diameter Assembly Type Slot Size

There are no records to show

Well Development

Developed by:

Development Total Duration:

Well Yield

No well yield data available.

Well Decommission Information

Reason for Decommission: NOT REQUIRED - AREA

TO BE FILLED

DECOMINISSION. NOT RECORDED - AREA

Sealant Material:

Decommission Details: TREMIE

Decommission Details. TREWI

CEMENT/BENTONITE GROUT FROM BOTTOM TO

TOP

•

Method of Decommission: PUMPED

Backfill Material:

Alternative Specs Submitted: No

Documents

No additional documentation available for this well.

Disclaimer

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Appendix E Closure Fund Memorandum



Memorandum

February 6, 2020

To: Beth Dunlop, Comox Valley Regional District Ref. No.: 056484-51-12

From: Jeremy Scott/cs/119-Rev.1 Tel: 604 248 3971

CC: Deacon Liddy

Subject: 2019 Closure and Post-Closure Fund Estimates Comox Strathcona Waste Management Campbell River, Comox Valley, Gold River, Tahsis and Zeballos, British Columbia

1. Introduction

This memorandum has been prepared by GHD Limited (GHD) for the Comox Valley Regional District (CVRD) to present the 2019 closure and post-closure (CPC) fund estimates for the following Comox Strathcona (CSWM) Solid Waste Management Centres (SWMCs):

- Campbell River
- Comox Valley Historic Landfill & Engineered Cell
- Gold River
- Tahsis
- Zeballos

Table 1 presents a summary of the CPC cost estimates for the six SWMCs.

2. Calculation Methodology

Landfill CPC fund estimates have been calculated based on the methodology for calculating landfill liability described in PS 3270 – Solid Waste Landfill Closure & Post-closure Liability. The following equation presents a summary of the methodology:

$$E = [A \times (B/C)] - D$$

Where:

A = Present value of estimated CPC expenditures for landfill site

B = Total used capacity of the landfill

C = Total capacity of the landfill (both used and unused)





D = Total CPC liabilities/expenditures recognized to date

E = Landfill CPC fund estimate

The estimated total CPC expenditures for the landfill sites were considered to consist of capital and operations expenditures and post-closure operation and maintenance (O&M) costs. Estimated closure costs and scheduling were based on the Comox Strathcona Waste Management (CSWM) 2019-2023 Proposed Financial Plan capital schedule. Post-closure O&M costs were developed by GHD based on experience with similar sized landfills in southwestern BC. Post closure monitoring costs were forecast based on current monitoring costs as contained in the agreement between GHD and the CVRD dated May 14, 2014 for all sites except the Comox Valley WMC Cell 1 which was estimated based on GHD experience at CVRD SWMCs.

2.1 Inflation and Discount Rates

All calculations of the present value of CPC costs were completed using the same rates for O&M inflation, construction cost inflation, and discount. The following list presents values and sources for inflation and discount rates applied:

- Construction cost inflation rate of 3.27% based on the 10 year average annual increase in the Vancouver non-residential building construction index from more recent available data (Q3 2019), as calculated by GHD.
- Discount rate of 2.81% based on the Municipal Finance Authority of BC's (MFA) 30 year indicative lending rate, at December 31, 2019, provided by the CSWM.
- Inflation rate of 1.65% based on the average annual percent change of the Consumer Price Index for BC (averaged over 2010-2019 period) as calculated by GHD.

Further details on values used for forecasts are presented below for each SWMC in turn.

3. Campbell River

Details of the present value calculations for the Campbell River SWMC are presented in Table 2. At this time the CVRD plans to close the landfill by 2023 when it reaches final capacity. The following list summarizes the key inputs to the CPC Fund Update:

- Closure of the existing landfill footprint will take place in phases between 2020 and 2023 at a total cost of \$10,562,500.
- Annual cost of post closure operations and monitoring of \$90,000.
- Annual cost of post-closure landfill gas collection system operations and maintenance of \$100,000.
- Total used capacity to the end of 2019 of 2,608,492 cubic metres (m³) as compared to a total capacity of 2,700,000 m³ (approximately 96.6% of total capacity used). Remaining airspace was estimated based on McElhanney Survey conducted November 2019 as compared to the top final contours surface prepared by GHD for the Campbell River 2017 Design, Operations and Closure Plan (GHD, 2018) (122,950 m³)



less an allowance for the placement of 0.75 metre thick final cover over the fill area (25,000 m³). Only the centre portion of the landfill where filling occurred in the last 2 years was included in the analysis.

• 30 year post closure period beginning in 2024.

The estimated present value of the CPC costs of the existing landfill is \$17,536,518. Based on the current airspace capacity used of 96.6 percent, the current landfill CPC liability is \$16,942,175.

4. Comox Valley

Details of the present value calculations for the Comox Valley SWMC are presented in Tables 3 and 4. Separate calculations were developed for the historical Comox Valley SWMC and Cell 1 of the Comox Valley SWMC. The following list summarizes the key inputs to the CPC Fund Update for each of the portions of the Comox Valley SWMC:

Historical Comox Valley SWMC (Table 3)

- Closure of the historical landfill footprint was planned for two phases. The first phase was partially completed in 2015. Phase 2 began in 2018 and will be completed in 2020. The final closure costs are anticipated to be \$200,000 for 2020.
- Annual cost of post closure monitoring of \$90,000.
- Cost of post closure landfill maintenance of \$20,000 every five years.
- Annual cost of post-closure landfill gas collection system operations and maintenance of \$75,000.
- Total used capacity to end of 2019 of 3,390,559 m³ compared to a total capacity of 3,390,559 m³. As 100% of total capacity is used the remaining airspace is 0 m³.
- 30 year post closure period beginning in 2020.

The estimated present value of the CPC cost of the historical Comox Valley SWMC landfill is \$4,872,111. Based on the current airspace capacity used of 100% percent, the current landfill CPC liability is \$4,872,111.

Comox Valley SWMC Cell 1 (Table 4)

- Closure of the Comox Valley SWMC Cell 1 is planned to consist of the following works:
 - Cell 1 design for partial closure and gas collection construction at \$328,000 for year 2020
 - Cell 1 gas collection construction at \$150,000 for year 2021
 - Cell 1 design for partial closure and gas collection construction at \$180,000 for 2022
 - Cell 1 design for partial closure and gas collection construction at \$330,000 for 2023
 - Cell 1 partial closure construction \$870,335 for 2024
- Annual cost of post closure monitoring of \$50,000.
- Cost of post closure landfill maintenance of \$10,000 every five years.
- Annual cost of post-closure LFG collection system operations and maintenance of \$25,000.



- Total used capacity to end of 2019 of 102,219 m³ as compared to a total capacity of 449,178 m³ (approximately 22.8% of total capacity used). Remaining airspace was determined based on survey data collected by McElhanney as compared to the base of final design contours from CVRD Fill plan.
- 30 year post closure period beginning in 2025.

The estimated present value of the CPC cost of Cell 1 is \$3,728,053. Based on the current airspace capacity used of 22.4 percent, the current landfill CPC liability is \$848,385.

Gold River

Details of the present value calculations for the Gold River SWMC are presented in Table 5. The following list summarizes the key inputs to the CPC Fund Update:

- Closure of the existing landfill footprint in 2026 at \$414,600 and 2027 at \$1,210,700.
- Annual cost of post closure operations and monitoring of \$26,500.
- Cost of post closure landfill maintenance of \$20,000 every five years.
- Total used capacity to end of 2019 of 54,870 m³ as compared to a total capacity of 58,000 m³ (approximately 94.6% of total capacity used). Remaining airspace was determined based on survey data collected by McElhanney and extrapolated from historical total airspace estimates.
- 30 year post closure period beginning in 2028.

The estimated present value of the CPC cost of the existing landfill is \$2,737,910. Based on the current airspace capacity used of 94.6 percent, the current landfill CPC liability is \$2,590,153.

6. Tahsis

Details of the present value calculations for the Tahsis SWMC are presented in Table 6. The following list summarizes the key inputs to the CPC Fund Update:

- Closure of the existing landfill footprint in 2024 at \$100,000 and 2025 at \$725,000.
- Annual cost of post closure operations and monitoring of \$24,000.
- Cost of post closure landfill maintenance of \$20,000 every five years.
- Total used capacity to the end of 2019 of 108,588 m³ as compared to a total capacity of 113,500 m³ (approximately 95.7% of total capacity used). Remaining airspace was determined based on survey data collected by McElhanney as compared to final design contours from GHD memo Tahsis Landfill Fill Plan Update dated April 2018, less an allowance for 0.75 m of final cover.
- 30 year post closure period beginning in 2026.

The estimated present value of the CPC of the existing landfill is \$1,710,100. Based on the current airspace capacity used 95.7 percent, the current landfill CPC liability is \$1,636,085.



7. Zeballos

Details of the present value calculations for the Zeballos SWMC are presented in Table 7. The following list summarizes the key inputs to the CPC Fund Update:

- Closure of the existing landfill footprint in 2024 at \$96,000 and 2025 at \$480,000.
- Annual cost of post closure operations and monitoring of \$28,000.
- Cost of post closure landfill maintenance of \$20,000 every five years.
- Total used capacity to the end of 2019 of 8967 m³ as compared to a total estimated capacity of 16,500 m3 (approximately 54.3% of total capacity used) calculated based on topographical surveys conducted in October 2018 and November 2019 and extrapolated based on historical reports.
- 30 year post closure period beginning in 2026.

The estimated present value of the CPC cost of the existing landfill is \$1,512,298. Based on the current airspace capacity used of 54.3 percent the current landfill CPC liability is \$821,865.

8. Cortes

GHD is working with the CVRD and MOE to abandon the permit for this site. No further closure costs are to be incurred. Therefore no CPC liability estimate was completed.

Table 1

Cost Estimate Summary 2019 Closure and Post-Closure Fund Estimates Comox Strathcona Solid Waste Management Centres

Waste Management Centre	Estimated Closure Year	Years to Closure	Total Closure/Post Closure Costs December 31, 2019 stated in 2014\$ (unless otherwise noted)	Inflated Closure/Post Closure Costs to year of Expenditure (3.2688% for construction, 1.6503% for O&M)	PV of Inflated Closure/ Post Closure Costs (MFA 30 year rate 2.81%)	% of Capacity used to December 31, 2019	Dec 31, 2019 Closure/ Post Closure Care Liability
Campbell River	2023	4	\$ 16,262,500	\$ 22,124,825	\$ 17,536,518	96.61%	\$ 16,942,175
Comox Valley Historical Landfill	2019	0	\$ 5,270,000	\$ 7,408,120	\$ 4,872,111	100.00%	4,872,111
Comox Valley Cell 1	2023	6	\$ 4,168,335	\$ 5,359,319	\$ 3,728,053	22.76%	848,385
Gold River	2027	8	\$ 2,540,300	\$ 3,929,036	\$ 2,737,910	94.60%	2,590,153
Tahsis	2025	6	\$ 1,665,000	\$ 2,486,061	\$ 1,710,100	95.67%	1,636,085
Zeballos	2025	6	\$ 1,536,000	\$ 2,318,573	\$ 1,512,298	54.35%	821,865
_			\$ 31,442,135	\$ 43,625,934	\$ 32,096,989		

Current year 2019

Total Closure/Post closure liability December 31, 2019

\$ 27,710,775

Table 2: Landfill Liability - Campbell River Waste Management Centre

Data:	31-Dec-19
Landfill Cover Option	LLDPE
Landfill Closure Date (approximate)	2023
Post Closure Period (years)	30
Current (Dec 2019) Cumulative Waste Volume (m3)	2,608,492
Remaining airspace volume (m3)	91,508
Landfill Capacity at Closure (m3)	2,700,000
Closure Construction Costs (2014\$)(2020-2024 PB)	\$ 10,562,500
Annual post closure O&M (2014\$)	\$ 90,000
Annual post closure LFG O&M (2014\$)	\$ 100,000
Construction cost escalation rate	3.2688%
Discount rate	2.81%
Inflation rate	1.6503%

Note 1 Note 2 Note 2 Note 3 Note 4 Note 5 Note 6 Note 7 Note 8

MFA Dec 2019 = 2.81%

Year	Years for FV calcs	Years for NPV		nstruction ash Flow 2014 \$	Cas	ntenance sh Flow 1014 \$	_	ash Flow is Inflation	Pre	esent Value	Decription of Cost
2014											
2020	6	1	\$	525,000	\$	-	\$	636,756	\$	619,352	Ph 2 LFG and final cover design
2021	7	2	\$	6,150,000	\$	-	\$	7,702,959	\$	7,287,640	
2022	8	3	\$	125,000	\$	-	\$	161,682	\$	148,784	Ph 3 closure design/surface water
2023	9	4	\$	3,762,500	\$	-	\$	5,025,703	\$	4,498,373	Ph 3 LFG and final cover design
2024	10	5			\$	190,000	\$	223,789	\$	194,833	Ph 3 LFG and final cover construction
2025	11	6			\$	190,000	\$	227,482	\$	192,635	Annual O&M plus annual LFG O&M
2026	12	7			\$	190,000	\$	231,236	\$	190,462	Annual O&M plus annual LFG O&M
2027	13	8			\$	190,000	\$	235,052	\$	188,314	Annual O&M plus annual LFG O&M
2028	14	9			\$	190,000	\$	238,931	\$	186,189	Annual O&M plus annual LFG O&M
2029	15	10			\$	190,000	\$	242,874	\$	184,089	Annual O&M plus annual LFG O&M
2030	16	11			\$	190,000	\$	246,882	\$	182,012	Annual O&M plus annual LFG O&M
2031	17	12			\$	190,000	\$	250,957	\$	179,959	Annual O&M plus annual LFG O&M
2032	18	13			\$	190,000	\$	255,098	\$		Annual O&M plus annual LFG O&M
2033	19	14			\$	190,000	\$	259,308	\$	175,922	Annual O&M plus annual LFG O&M
2034	20	15			\$	190,000	\$	263,587	\$	173,938	Annual O&M plus annual LFG O&M
2035	21	16			\$	190,000	\$	267,937	\$	171,976	Annual O&M plus annual LFG O&M
2036	22	17			\$	190,000	\$	272,359	\$	170,036	Annual O&M plus annual LFG O&M
2037	23	18			\$	190,000	\$	276,853	\$	168,118	Annual O&M plus annual LFG O&M
2038	24	19			\$	190,000	\$	281,422	\$	166,221	Annual O&M plus annual LFG O&M
2039	25	20			\$	190,000	\$	286,066	\$	164,346	Annual O&M plus annual LFG O&M
2040	26	21			\$	190,000	\$	290,787	\$	162,492	Annual O&M plus annual LFG O&M
2041	27	22			\$	190,000	\$	295,586	\$	160,659	Annual O&M plus annual LFG O&M
2042	28	23			\$	190,000	\$	300,464	\$	158,847	Annual O&M plus annual LFG O&M
2043	29	24			\$	190,000	\$	305,423	\$	157,055	Annual O&M plus annual LFG O&M
2044	30	25			\$	190,000	\$	310,463		155,284	Annual O&M plus annual LFG O&M
2045	31	26			\$	190,000	\$	315,586	\$	153,532	Annual O&M plus annual LFG O&M
2046	32	27			\$	190,000	\$	320,794			Annual O&M plus annual LFG O&M
2047	33	28			\$	190,000	\$	326,088			Annual O&M plus annual LFG O&M
2048	34	29			\$	190,000	\$	331,470			Annual O&M plus annual LFG O&M
2049	35	30			\$	190,000	\$	336,940	\$	146,721	Annual O&M plus annual LFG O&M
2050	36	31			\$	190,000	\$	342,500	\$		Annual O&M plus annual LFG O&M
2051	37	32			\$	190,000	\$	348,152	\$	143,429	Annual O&M plus annual LFG O&M
2052	38	33			\$	190,000	\$	353,898	\$		Annual O&M plus annual LFG O&M
2053	39	34			\$	190,000		359,738			Annual O&M plus annual LFG O&M
TOTAL COST \$ 10,562,500 \$ 5,700,000 \$ 22,124,825										17,536,518	
NPV of	NPV of Estimated Closure and Post Closure Costs =									17,536,518	
Landfill Liability in Dec 2019 (\$) =										16,942,175	NPV x (Cumulative Capacity Used)/(Total Estimated Capacity)

Notes:

- (1) Airspace consumed calculated based on operational data for waste received at the site during 2019.
- (2) Total airspace remaining and waste in place calculated as of December 31, 2019 based on McElhanney Survey conducted November 2019 as compared to the top final contours surface prepared by GHD for the Campbell River 2017 Design, Operations and Closure Plan (GHD, 2018) less an allowance for the placement of 0.75 metre thick final cover over the fill area. Only the centre portion of the landfill where filling occurred in the last 2 years was included in the analysis. Construction costs in 2014\$
- (3)
- (4) Annual post closure operating and maintenance costs include environmental monitoring costs.
- (5) Annual Post Closure Landfill Gas System costs calculated assuming landfill gas collection system will be finalized in 2021.
- Construction cost inflation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019). Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019 (6)
- (7) (8)
 - Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01)

Table 3: Landfill Liability - Comox Valley Waste Management Centre - Historical Landfill

Data:	31-Dec-19	
Landfill Cover Option	LLDPE	7
Landfill Closure Date (approximate)	Early 2020	
Post Closure Period (years)	30	
Current (Dec 2019) waste in place (m3)	3,390,559	
Remaining airspace (Dec 2019) (m3)	0	
Landfill Capacity at Closure (m3)	3,390,559	
Closure construction costs (2014\$)	\$ 200,00	0
Annual post closure O&M (2014\$)	\$ 90,00	0
5th year post closure O&M costs (2014\$)	\$ 110,00	0
Annual post closure LFG O&M (2014\$)	\$ 75,00	0
Construction cost escalation rate	3.2688%	
Discount rate	2.81%	
Inflation rate	1.6503%	

Year	Years for FV calcs	Years for NPV	Construction Costs Cash Flow (2014 \$)	Monitoring / Maintenance Cash Flow (2014 \$)		Cash Flow plus Inflation		esent Value	Decription of Cost
2014									
2020	6	1	\$ 200,000	,		424,600	_		Cwfd 2019 closure + Annual O&M plus LFG
2021	7	2		\$ 165,000		185,031	\$		Annual O&M plus annual LFG O&M
2022	8	3		\$ 165,000	\$	188,084	\$	173,080	Annual O&M plus annual LFG O&M
2023	9	4		\$ 185,000	\$	214,362	\$	191,870	Annual O&M plus annual LFG O&M plus 5 year maintenance
2024	10	5		\$ 165,000	\$	194,343	\$		Annual O&M plus annual LFG O&M
2025	11	6		\$ 165,000	\$	197,550	\$	167,288	Annual O&M plus annual LFG O&M
2026	12	7		\$ 165,000	\$	200,810	\$		Annual O&M plus annual LFG O&M
2027	13	8		\$ 165,000	\$	204,124	\$	163,535	Annual O&M plus annual LFG O&M
2028	14	9		\$ 185,000	\$	232,644	\$	181,290	Annual O&M plus annual LFG O&M plus 5 year maintenance
2029	15	10		\$ 165,000	\$	210,917	\$	159,867	Annual O&M plus annual LFG O&M
2030	16	11		\$ 165,000	\$	214,398	\$	158,063	Annual O&M plus annual LFG O&M
2031	17	12		\$ 165,000	\$	217,936	\$	156,280	Annual O&M plus annual LFG O&M
2032	18	13		\$ 165,000	\$	221,533	\$	154,518	Annual O&M plus annual LFG O&M
2033	19	14		\$ 185,000	\$	252,484	\$	171,293	Annual O&M plus annual LFG O&M plus 5 year maintenance
2034	20	15		\$ 165,000	\$	228,905	\$	151,051	Annual O&M plus annual LFG O&M
2035	21	16		\$ 165,000	\$	232,682	\$	149,347	Annual O&M plus annual LFG O&M
2036	22	17		\$ 165,000	\$	236,522	\$	147,663	Annual O&M plus annual LFG O&M
2037	23	18		\$ 165,000	\$	240,425	\$	145,997	Annual O&M plus annual LFG O&M
2038	24	19		\$ 185,000	\$	274,016	\$	161,847	Annual O&M plus annual LFG O&M plus 5 year maintenance
2039	25	20		\$ 165,000	\$	248,426	\$	142,722	Annual O&M plus annual LFG O&M
2040	26	21		\$ 165,000	\$	252,526	\$	141,112	Annual O&M plus annual LFG O&M
2041	27	22		\$ 165,000	\$	256,693	\$	139,520	Annual O&M plus annual LFG O&M
2042	28	23		\$ 165,000	\$	260,929	\$	137,946	Annual O&M plus annual LFG O&M
2043	29	24		\$ 185,000	\$	297,385	\$	152,922	Annual O&M plus annual LFG O&M plus 5 year maintenance
2044	30	25		\$ 165,000	\$	269,612	\$	134,852	Annual O&M plus annual LFG O&M
2045	31	26		\$ 165,000	\$	274,062	\$	133,330	Annual O&M plus annual LFG O&M
2046	32	27		\$ 165,000	\$	278,585	\$	131,826	Annual O&M plus annual LFG O&M
2047	33	28		\$ 165,000	\$	283,182	\$	130,339	Annual O&M plus annual LFG O&M
2048	34	29		\$ 185,000	\$	322,747	\$	144,490	Annual O&M plus annual LFG O&M plus 5 year maintenance
2049	35	30		\$ 165,000	\$	292,606	\$	127,415	Annual O&M plus annual LFG O&M
TOTAL	COST		\$ 200,000	\$ 5,070,000	\$	4,872,111			
NPV of Estimated Closure and Post Closure Costs =								4,872,111	
Landfill	Landfill Liability in Dec 2019 (\$) =								NPV x (Cumulative Capacity Used)/(Total Estimated Capacity)

Notes:

- (1) Landfill final cover installed Summer 2019
- (2) Total site capacity based on Annual Operations and Monitoring Report (GHD, 2017) and revised final contours (EBA, 2017).
- (3) Construction costs in 2014\$ from proposed financial plan capital schedules.
- (4) Annual post closure operating and maintenance costs include environmental monitoring costs, estimated based on GHD experience at CVRD waste management centres.
- (5) Annual Post Closure Landfill Gas System costs calculated assuming landfill gas collection system will be finalized in 2021. Estimated based on GHD experience at similar sites in British Columbia.
- (6) Construction cost inflation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019).
- (7) Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019
- (8) Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01)

Table 4: Landfill Liability - Comox Valley Waste Management Centre - Cell 1 (Progressive Closure)

Data:	31-Dec-19	
Landfill Cover Option	LLDPE	
Landfill Closure Date (approximate)	2024	
Post Closure Period (years)	30	
Current (Dec 2019) waste in place (m3)	102,219	Note 1
Remaining airspace (Dec 2019) (m3)	346,960	Note 2
Landfill Capacity at Closure (m3)	449,178	Note 3
Closure construction costs (2019\$) (2020-2024 PB)	\$1,858,335	Note 4
Annual post closure O&M (2019\$)	\$50,000	Note 5
5th year post closure O&M costs (2019\$)	\$60,000	Note 5
Annual post closure LFG O&M (2019\$)	\$25,000	Note 6
Construction cost escalation rate	3.2688%	Note 7
Discount rate	2.81%	Note 8
Inflation rate	1.6503%	Note 9

Year	Years for FV calcs	Years for NPV	Ca	nstruction Costs Ish Flow 2019 \$)	Ma C	onitoring / intenance ash Flow (2019 \$)	Cas	sh Flow plus Inflation	Present Value		Decription of Cost	
2020	1	1	\$	328,000			\$	338,722	\$	329,464	Cell 1 design for partial closure/gas collection	
2021	2	2	\$	150,000			\$	159,967	\$	151,342	Cell 1 gas collection construction	
2022	3	3	\$	180,000			\$	198,235	\$	182,420	Cell 1 design for partial closure/gas collection constr	
2023	4	4	\$	330,000			\$	375,310	\$	335,930	Cell 1 design for partial closure/gas collection constr	
2024	5	5	\$	870,335			\$	1,022,189	\$	889,927	Cell 1 partial closure construction	
2025	6	6			\$	75,000	\$	82,739	\$	70,065		
2026	7	7			\$	75,000	\$	84,105	\$	69,275		
2027	8	8			\$	75,000	\$	85,493	\$	68,493		
2028	9	9			\$	85,000	\$	98,491	\$	76,750		
2029	10	10			\$	75,000	\$	88,338	\$	66,957		
2030	11	11			\$	75,000	\$	89,796	\$	66,201		
2031	12	12			\$	75,000	\$	91,277	\$	65,454		
2032	13	13			\$	75,000	\$	92,784	\$	64,716		
2033	14	14			\$	85,000	\$	106,890	\$	72,518		
2034	15	15			\$	75,000	\$	95,871	\$	63,264		
2035	16	16			\$	75,000		97,454	\$	62,551		
2036	17	17			\$	75,000	\$	99,062	\$	61,845		
2037	18	18			\$	75,000	\$	100,697	\$	61,147		
2038	19	19			\$	85,000	\$	116,006	\$	68,519		
2039	20	20			\$	75,000	\$	104,048	\$	59,776		
2040	21	21			\$	75,000	\$	105,765	\$	59,101		
2041	22	22			\$	75,000	\$	107,510	\$	58,435		
2042	23	23			\$	75,000	\$	109,284	\$	57,776		
2043	24	24			\$	85,000	\$	125,899	\$	64,740		
2044	25	25			\$	75,000	\$	112,921	\$	56,479		
2045	26	26			\$	75,000	\$	114,784	\$	55,842		
2046	27	27			\$	75,000	\$	116,679	\$	55,212		
2047	28	28			\$	75,000	\$	118,604	\$	54,590		
2048	29	29			\$	85,000	\$	136,636	\$	61,170		
2049	30	30			\$	75,000	\$	122,551	\$	53,365		
2050	31	31			\$	75,000		124,574	\$	52,763		
2051	32	32			\$	75,000	\$	126,629	\$	52,168		
2052	33	33			\$	75,000	\$	128,719	\$	51,579		
2053	34	34			\$	85,000	\$	148,289	\$	57,797		
2054	35	35			\$	75,000	\$	133,003	\$	50,422		
TOTAL COST \$ 1,858,335 \$ 2,310,000 \$ 5,359,319										3,728,053		
NPV of Estimated Closure and Post Closure Costs =									\$	3,728,053		
Landfill Liability in Dec 2019 (\$) =									\$848,385	NPV x (Cumulative Capacity Used)/(Total Estimated Capacity)		

Notes:

- (1)
- Waste in place calculated based on the difference of landfill capacity at closure and remaining airspace
 Remaining airspace capacity calculated based on comparison of November 2019 survey and liner top of gravel survey pro-rated to Dec 31
 2019 using tonnage data provided by CVRD (2)
- Landfill capacity at closure calculated based on comparison of Final stage contours and top of stone liner survey Construction costs in 2017\$ from proposed financial plan capital schedules. (3)
- (4)
- (5) Annual post closure operating and maintenance costs include environmental monitoring costs, estimated based on GHD experience at CVRE
- Annual Post Closure Landfill Gas System costs calculated assuming landfill gas collection system will be finalized in 2024. Estimated based (6)
- on GHD experience at similar sites in British Columbia.

 Construction cost inflation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019). (7)
- Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019. (8)
- (9) Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01)

Table 5: Landfill Liability Assessment - Gold River Waste Management Centre

Data:	31-Dec-19	
Landfill Cover Option	GCL	
Landfill Closure Date (approximate)	2027	
Post Closure Period (years)	30	
Current (Dec 2019) waste in place (m3)	54,870	Note 1
Landfill Capacity at Closure (m3)	58,000	Note 2
Closure Costs (2014\$) (2020-2024 PB)	\$1,625,300	Note 3
Annual post closure O&M (2014\$)	\$26,500	Note 4
5th year post closure O&M costs (2014\$)	\$46,500	Note 4
Construction cost escalation rate	3.2688%	Note 5
Discount rate	2.81%	Note 6
Inflation rate	1.6503%	Note 7

Year	Years for FV	Years for PV	Cash Flow	(2014\$)	_	ash Flow is Inflation	ı	Present Value	Description of Cost
			Construction/	Monitoring					
			Other	/Maintenance					
2014									
2020	6	1	-			-		-	
2021	7	2	-			-		-	
2022	8	3	-			-		-	
2023	9	4	-			-		-	
2024	10 11	5 6				-			
2025 2026	12	7	\$ 414,600		\$	609,897	\$	502,353	Cleaure angineering based on entire 2 DOC plan
2020	13	8	\$ 1,210,700		\$	1,839,215		1,473,499	
2027	14	9	\$ 1,210,700	\$ 26.500	\$	33,325	\$	25,969	Annual O&M
2029	15	10		\$ 26,500	\$	33,875	\$	25,909	
2030	16	11		\$ 26,500	\$	34,434	\$	- ,	Annual O&M
2031	17	12		\$ 26,500	\$	35,002	\$		Annual O&M
2032	18	13		\$ 46,500	\$	62,432	\$	43,546	
0000	19	14				36,167			,
2033 2034	20	15		\$ 26,500 \$ 26,500	\$	36,763	\$	24,537 24,260	Annual O&M Annual O&M
	21	16		\$ 26,500	\$	37,370	\$		Annual O&M
2035 2036	22	17		\$ 26,500	\$	37,987	\$		Annual O&M
2030	23	18		\$ 46,500	\$	67,756	\$		Annual O&M plus allowance for 5 year maintenance
2038	24	19		\$ 26,500	\$	39,251	\$	23,183	Annual O&M
2039	25	20		\$ 26,500	\$	39,251	\$	22,922	
2039	26	21		\$ 26,500	\$	40,557	\$	22,663	
2041	27	22		\$ 26,500	\$	41,226	\$	22,408	
2042	28	23		\$ 46,500	\$	73,535	\$	38,876	
2043	29	24		\$ 26,500	\$	42,598	\$	21,905	Annual O&M
2043	30	25		\$ 26,500	\$	43,301	\$	21,658	
2044	31	26		\$ 26,500	\$	44.016	\$		Annual O&M
2046	32	27		\$ 26,500	\$	44,742	\$	21,172	
2047	33	28		\$ 46,500	\$	79,806	\$		Annual O&M plus allowance for 5 year maintenance
2048	34	29		\$ 26,500	\$	46,231	\$	20,697	Annual O&M
2049	35	30		\$ 26,500	\$	46,994	\$	20,464	
2050	36	31		\$ 26,500	\$	47,770	\$	20,233	
2051	37	32		\$ 26,500	\$	48,558	\$	20,005	Annual O&M
2052	38	33		\$ 46,500	\$	86,612	\$	34,706	Annual O&M plus allowance for 5 year maintenance
2053	39	34		\$ 26,500	\$	50,174	\$	19,556	
2054	40	35		\$ 26,500	\$	51,002	\$	19,335	Annual O&M
2055	41	36		\$ 26,500	\$	51,844	\$	19,117	Annual O&M
2056	42	37		\$ 26,500	\$	52,699	\$	18,901	Annual O&M
2057	43	38		\$ 46,500	\$	93,998	\$	32,793	Annual O&M plus allowance for 5 year maintenance
OTAL C	OST		\$1,625,300	\$915,000	\$	3,929,036	\$2	2,737,910	
V of E	stimated	Closure	and Post Closure					2,737,910	
ndfill L	iability ii	n Dec 20	19 (\$) =				\$:	2,590,153	NPV x (Cumulative Capacity Used)/(Total Estimate Capacity)

Notes:

- Remaining capacity as of December 31, 2019 calculated based on surveys conducted October 9 2018 and October 28 2019 prorated to end of (1) 2019.
- Total site capacity based on Annual Operations and Monitoring Report (GHD, 2017).
- (2) (3) Construction costs in 2014\$ from proposed financial plan capital schedules. Transfer Station costs are not included in closure costs.
- Annual post closure operating and maintenance costs include environmental monitoring costs, estimated based on GHD experience at CVRD (4) waste management centres.
- Construction cost inflation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019). (5)
- (6)
- Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019

 Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01) (7)

Table 6: Landfill Liability Assessment - Tahsis Waste Management Centre

Data:	31-Dec-2019	
Landfill Cover Option	GCL	
Landfill Closure Date (approximate)	2025	
Post Closure Period (years)	30	
Current (Dec 2019) waste in place (m3)	108,588	Note
Remaining Airspace (m3)	4,912	Note
Landfill Capacity at Closure (m3)	113,500	Note
Closure Costs (2014\$) (2020-2024 PB)	\$ 825,000	Note
Annual post closure O&M (2014\$)	\$ 24,000	Note
5th year post closure O&M costs (2014\$)	\$ 44,000	Note
Construction cost escalation rate	3.2688%	Note
Discount rate	2.81%	Note
Inflation rate	1.6503%	Note

Year	Years for FV	Years for PV		Cash Flo	w (2	014\$)	Cash Flow us Inflation	Pre	esent Value	Description of Cost
				nstruction/ Other		onitoring intenance				
2014			\$	-			\$ -	\$	-	
2020	6	1	\$	-			\$ -	\$	-	
2021	7	2	\$	-			\$ -	\$	-	
2022	7	3	\$	-			\$ -	\$	-	
2023	9	4	\$	-			\$ -	\$	-	
2024	10	5	\$	100,000			\$ 137,940	\$	120,092	Final closure engineering (2014\$) based on Opt 2 DOC
2025	11	6	\$	725,000			\$ 1,032,752	\$	874,549	Final closure construction/final capping (2014\$)
2026	12	7			\$	24,000	\$ 29,209	\$	24,058	Annual O&M
2027	13	8	_		\$	24,000	\$ 29,691	\$	23,787	Annual O&M
2028	14	9	<u> </u>		\$	24,000	\$ 30,181	\$	23,519	Annual O&M
2029	15	10	-		\$	24,000	\$ 30,679	\$	23,253	Annual O&M
2030	16	11			\$	44,000	\$ 57,173	\$	42,150	Annual O&M plus allowance for 5 year maintenance
2031	17	12			\$	24,000	\$ 31,700	\$	22,732	Annual O&M
2032	18	13			\$	24,000	\$ 32,223	\$	22,475	
2033	19	14			\$	24,000	\$ 32,755	\$	22,222	Annual O&M
2034	20	15			\$	24,000	\$ 33,295	\$	21,971	Annual O&M
2035	21	16			\$	44,000	\$ 62,049	\$	39,826	Annual O&M plus allowance for 5 year maintenance
2036	22	17			\$	24,000	\$ 34,403	\$	21,478	Annual O&M
2037	23	18			\$	24,000	\$ 34,971	\$	21,236	Annual O&M
2038	24	19			\$	24,000	\$ 35,548	\$	20,996	Annual O&M
2039	25	20			\$	24,000	\$ 36,135	\$	20,760	Annual O&M
2040	26	21			\$	44,000	\$ 67,340	\$	37,630	Annual O&M plus allowance for 5 year maintenance
2041	27	22			\$	24,000	\$ 37,337	\$	20,294	Annual O&M
2042	28	23			\$	24,000	\$ 37,953	\$	20,065	Annual O&M
2043	29	24			\$	24,000	\$ 38,580	\$	19,839	Annual O&M
2044	30	25			\$	24,000	\$ 39,216	\$	19,615	Annual O&M
2045	31	26			\$	44,000	\$ 73,083	\$	35,555	Annual O&M plus allowance for 5 year maintenance
2046	32	27			\$	24,000	\$ 40,521	\$	19,175	Annual O&M
2047	33	28			\$	24,000	\$ 41,190	\$	18,958	Annual O&M
2048	34	29			\$	24,000	\$ 41,870	\$	18,745	Annual O&M
2049	35	30			\$	24,000	\$ 42,561	\$	18,533	Annual O&M
2050	36	31			\$	44,000	\$ 79,316	\$	33,594	Annual O&M plus allowance for 5 year maintenance
2051	37	32			\$	24,000	\$ 43,977	\$	18,117	Annual O&M
2052	38	33			\$	24,000	\$ 44,703	\$	17,913	Annual O&M
2053	39	34			\$	24,000	\$ 45,441	\$	17,711	Annual O&M
2054	40	35			\$	24,000	\$ 46,190	\$	17,511	Annual O&M
2055	41	36			\$	44,000	\$ 86,080	\$	31,742	Annual O&M plus allowance for 5 year maintenance
TOTAL C			\$	825,000	\$	840,000	\$ 2,486,061	\$	1,710,100	
NPV of E	stimated	Closure	and	Post Clos	ure C	Costs =		\$	1,710,100	
Landfill L	iability ii	n Dec 20	19 (\$) =				\$	1,636,085	NPV x (Cumulative Capacity Used)/(Total Estimated Capacity)

Notes:

- Remaining capacity as of December 31, 2019 calculated based on surveys conducted October 2019 and Final top of cover survey (1) prorated to end of 2019. 0.75m of final cover was assumed and subtracted from thr final top of cover survey
- Total site capacity based on Annual Operations and Monitoring Report (GHD, 2017).

 Construction costs in 2014\$ from proposed financial plan capital schedules. Transfer Station costs are not included in closure costs. (2) (3)
- Annual post closure operating and maintenance costs include environmental monitoring costs, estimated based on GHD experience at (4) CVRD waste management centres.
- (5) Construction cost in lation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019).
- Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019.

 Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01)

Table 7: Landfill Liability Assessment - Zeballos Waste Management Centre

Data:	31-	Dec-2019
Landfill Cover Option		GCL
Landfill Closure Date (approximate)		2025
Post Closure Period (years)		30
Current (Dec 2019) waste in place (m3)		8967
Remaining Airspace (m3)		7533
Landfill Capacity at Closure (m3)		16500
Closure Costs (2014\$) (2019-2023 PB)	\$	576,000
Annual post closure O&M (2014\$)	\$	28,000
5th year post closure O&M costs (2014\$)	\$	48,000
Construction cost escalation rate	3	.2688%
Discount rate		2.81%
Inflation rate	1	.6503%

Note 1 Note 1 Note 2 Note 3 Note 4 Note 4 Note 5

> Note 6 Note 7

Year	Years for FV	Years for PV		Cash Flo	w (20	014\$)	С	ash Flow plus Inflation	N	et Present Value	Description of Cost
				struction/ Other		onitoring intenance					
2014											
2020	6	1									
2021	7	2									
2022	8	3									
2023	9	4									
2024	10	5	\$	96,000			\$	132,422	\$	115,288	Final closure engineering, option 2 DOC plan
2025	11	6	\$	480,000			\$	683,753	\$		Final closure construction/final capping
2026	12	7			\$	28,000	\$	34,077	\$	28,068	
2027	13	8			\$	28,000	\$	34,639	\$	27,751	Annual O&M
2028	14	9			\$	28,000	\$	35,211	\$	27,438	Annual O&M
2029	15	10			\$	28,000	\$	35,792	\$	27,129	Annual O&M
2030	16	11			\$	48,000	\$	62,370	\$	45,982	Annual O&M plus allowance for 5 year maintenance
2031	17	12			\$	28,000	\$	36,983	\$	26,520	Annual O&M
2032	18	13			\$	28,000	\$	37,593	\$	26,221	Annual O&M
2033	19	14			\$	28,000	\$	38,214	\$	25,925	Annual O&M
2034	20	15			\$	28,000	\$	38,844	\$	25,633	
2035	21	16			\$	48,000	\$	67,689	\$	43,446	Annual O&M plus allowance for 5 year maintenance
2036	22	17			\$	28,000	\$	40,137	\$	25,058	Annual O&M
2037	23	18			\$	28,000	\$	40,799	\$	24,775	Annual O&M
2038	24	19			\$	28,000	\$	41,473	\$	24,496	Annual O&M
2039	25	20			\$	28,000	\$	42,157	\$	24,219	Annual O&M
2040	26	21			\$	48,000	\$	73,462	\$	41,051	Annual O&M plus allowance for 5 year maintenance
2041	27	22			\$	28,000	\$	43,560	\$	23,676	Annual O&M
2042	28	23			\$	28,000	\$	44,279	\$	23,409	Annual O&M
2043	29	24			\$	28,000	\$	45,010	\$	23,145	Annual O&M
2044	30	25			\$	28,000	\$	45,752	\$	22,884	Annual O&M
2045	31	26			\$	48,000	\$	79,727	\$	38,787	Annual O&M plus allowance for 5 year maintenance
2046	32	27			\$	28,000	\$	47,275	\$	22,371	Annual O&M
2047	33	28			\$	28,000	\$	48,055	\$	22,118	Annual O&M
2048	34	29			\$	28,000	\$	48,848	\$	21,869	Annual O&M
2049	35	30			\$	28,000	\$	49,654	\$	21,622	Annual O&M
2050	36	31			\$	48,000	\$	86,526	\$	36,648	Annual O&M plus allowance for 5 year maintenance
2051	37	32			\$	28,000	\$	51,307	\$	21,137	Annual O&M
2052	38	33			\$	28,000	\$	52,153	\$	20,899	Annual O&M
2053	39	34			\$	28,000	\$	53,014	\$	20,663	Annual O&M
2054	40	35			\$	28,000	\$	53,889	\$	20,430	Annual O&M
2055	41	36			\$	48,000	\$	93,906	\$	34,627	Annual O&M plus allowance for 5 year maintenance
TOTAL C			\$	576,000	\$	960,000	\$	2,318,573	\$	1,512,298	
NPV of E	stimated	Closure	and	Post Clos	ure C	osts =			\$	1,512,298	
andfill L	iability i	n Dec 20	19 (\$) =					\$	821,865	NPV x (Cumulative Capacity Used)/(Total Estimated Capacity)

Notes:

- (1) Remaining capacity as of December 31, 2019 calculated based on surveys conducted November 2019 and top of waste survey prorated to end of 2019.
- (2) Total site capacity based on Annual Operations and Monitoring Report (GHD, 2017).
- (3) Construction costs in 2014\$ from proposed financial plan capital schedules. Transfer Station costs are not included in closure costs.
- (4) Annual post closure operating and maintenance costs include environmental monitoring costs, estimated based on GHD experience at CVRD waste management centres.
- (5) Construction cost inflation rate applied to forecast construction costs, calculated based on 10 year average annual increase in Vancouver non-residential building construction index (CANSIM Table 18-10-0135-01) (latest index Q4 2019).
- (6) Discount rate calculated based on MFA 30 year borrowing rate as of December 31, 2019
- (7) Operations and maintenance inflation rate applied to operations and maintenance costs. Calculated based on the average of the annual percent change of the Consumer price index for BC (averaged over 2010-2019 period) (CANSIM Table 18-10-0004-01)

Appendix F 2019 Monitoring Specification

Environmental Monitoring Program Specification – 2019

PROJECT: Comox Strathcona Waste Management

Campbell River Waste Management Centre

PROJECT NO.: 056484-52

PROJECT MANAGER: Greg Ferraro

PROJECT COORDINATOR: Michaela Dyck

MONITORING STAFF: RESPONSIBILITY

Natasha Turl

Field Technician(s)

Chris Thorne

Airesse MacPhee QA/QC Chemist Laurie Clark Database Manager

LABORATORIES USED: ALS Environmental, Burnaby, BC

AUTHORIZATION: MONITORING EVENT(S) PC/PM SIGNATURE

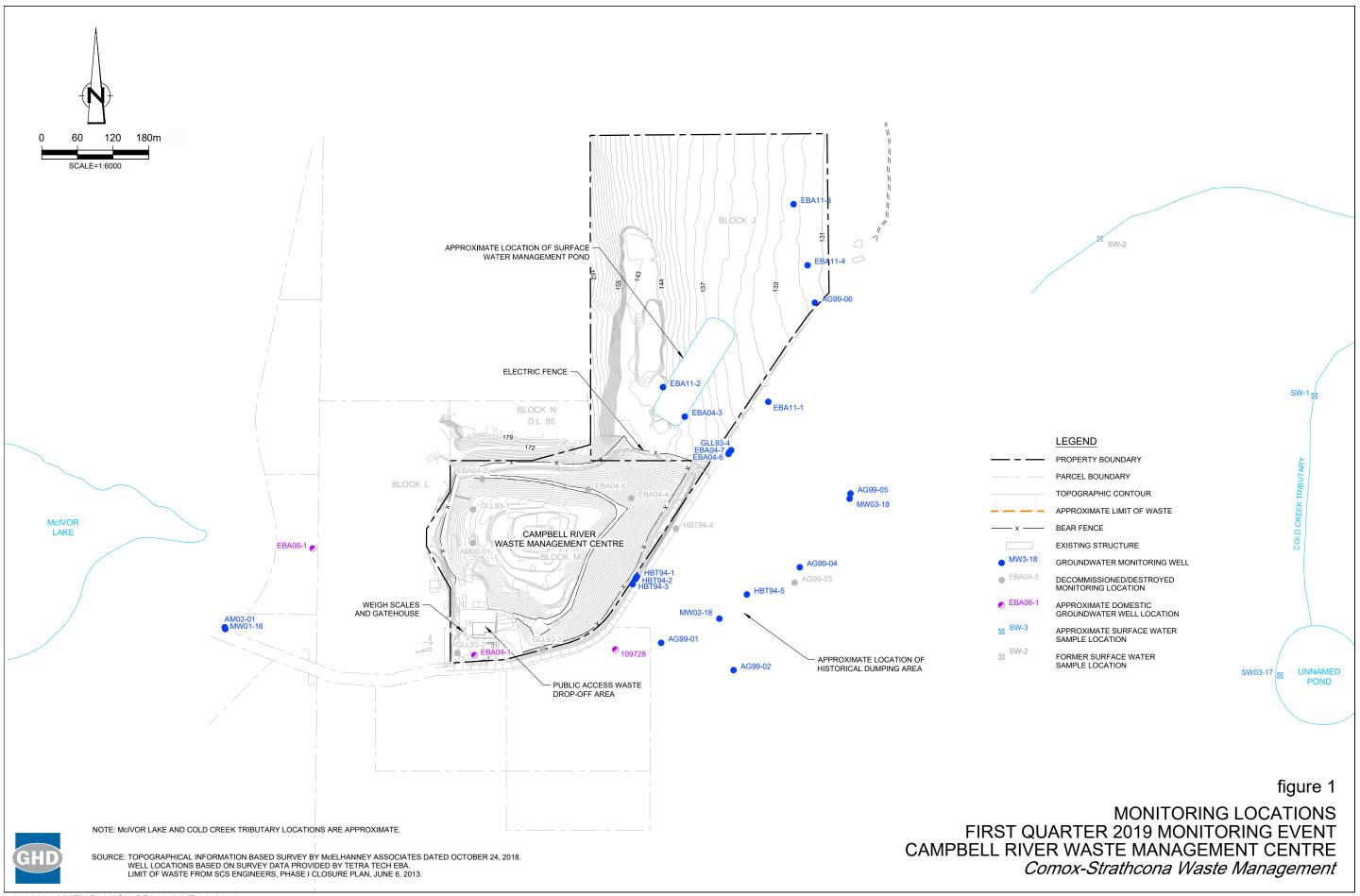
Feb, May, Aug, Nov

Revision #	Date	Revision	GHD
1	Apr 2014	Monitoring spec creation.	MND
2	Jun 2014	39950, EBA06-1, and HBT94-4 removed from sampling program. Phosphorus analysis changed to metals analysis instead of colorimetric method.	MND
3	Jan 2016	SW-2 added to surface water monitoring program, updated field and database staffing, added WG matrix to field blank.	TE
4	Mar 2016	Added dissolved metals analysis to WS schedule to differentiate from total metals when comparing criteria	CR
5	Jan 2017	Reduced sampling for VOCs to a semi-annual schedule (February and August)	MND
6	May 2017	Added SW03-17 and well tag 109728 (domestic well) to the monitoring program. Switched WS metals analyses to low levels analysis.	MND
7	Jan 2018	Removed well tag 109728 from monitoring program. Updated project staffing. Added TDS to the parameter list.	NT
8	April 2019	Removed EBA04-4 and EBA04-3 from monitoring program, as both are inaccessible. Added MW02-18 and MW03-18 to monitoring program (began sampling in August 2018).	NT

WATER QUALITY MONITORING

Monitoring Locations: Figure 1 and Table 1

Monitoring Frequency: Table 1
Monitoring Parameters: Table 2



Sampling Schedule Environmental Monitoring Program Specification - 2019

				Quarterly	Semi-annual
Monitoring Location	Monitoring Location Purpose	Sample Matrix	Hydraulic Monitoring	Feb, May, Aug, Nov	Feb, Aug
Groundwater M	Monitoring Program (21 locations)	•	1		1
AG99-01	Monitor downgradient groundwater quality to the east of the Site, off-Site.	WG	\checkmark	Schedule A	-
AG99-02	Monitor downgradient groundwater quality to the east of the Site, off-Site.	WG	√	Schedule A	-
AG99-04	Monitor downgradient groundwater quality to the east of the Site, off-Site.	WG	√	Schedule A	-
AG99-05	Monitor downgradient groundwater quality to the east of the Site, off-Site, deep nested well.	WG	√	Schedule A	-
AG99-06	Downgradient of the Site to the northeast, off-Site	WG	$\sqrt{}$	Schedule A	Schedule B
MW01-16	Background.	WG	√	Schedule A	Schedule B
AM02-01	Background.	WG	\checkmark	Schedule A	Schedule B
EBA04-1	Tap from the building near the scalehouse.	WG	-	Schedule A	-
EBA04-6	Northeast toe of landfill, off-Site.	WG	$\sqrt{}$	Schedule A	-
EBA04-7	Northeast toe of landfill, off-Site.	WG	V	Schedule A	Schedule B
EBA11-1	Downgradient of the Site to the northeast, off-Site.	WG	$\sqrt{}$	Schedule A	Schedule B
EBA11-2	Downgradient of the Site to the northeast, off-Site.	WG	V	Schedule A	-
EBA11-3	Downgradient of the Site to the northeast, off-Site.	WG	$\sqrt{}$	Schedule A	Schedule B
EBA11-4	Downgradient of the Site to the northeast, off-Site.	WG	V	Schedule A	Schedule B
GLL93-4	Northeast toe of landfill, off-Site.	WG	$\sqrt{}$	Schedule A	-
HBT94-1	Southeast property line.	WG	V	Schedule A	-
HBT94-2	Southeast property line.	WG	$\sqrt{}$	Schedule A	Schedule B
HBT94-3	Southeast property line.	WG	√	Schedule A	-
HBT94-5	Monitor downgradient groundwater quality to the east of the Site, off-Site.	WG	$\sqrt{}$	Schedule A	-
MW02-18	Monitor downgradient groundwater quality to the east of the Site, off-Site.	WG	V	Schedule A	Schedule B
MW03-18	Monitor downgradient groundwater quality to the east of the Site, off-Site, shallow nested well.	WG	√	Schedule A	-
Surface Water	Monitoring Program (2 locations)				
SW-1	Cold Creek Tributary	WS	√	Schedule A	-
SW03-17	Unnamed Pond upstream of SW-1	ws	√	Schedule A	-
Field Quality A	ssurance/Quality Control				
Field Blank		WG	-	Schedule A	-
Groundwater D	uplicate	WG	-	Schedule A (2x)	Schedule B (2x)
Surface Water l	Duplicate	ws	-	-	Schedule A (Feb only)
Trip Blank (VO0	Cs)	WG	-	-	Schedule B

Notes:

WG - Groundwater

WS - Surface Water

 $\boldsymbol{\sqrt{}}$ - Every monitoring event

Table 2 Page 1 of 1

Analytical Parameters Environmental Monitoring Program Specification - 2019

	Groundwater	Surface Water
Schedule /	A	
Hydraulic Monitoring		
Water level Depth to bottom of well Flow	√ √ -	- - √
Field Parameters		
Dissolved Oxygen Oxidation-Reduction Potential (ORP) pH Conductivity (uS/cm) Temperature Total Dissolved Solids (TDS) Turbidity	\ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \
General Chemistry		
Alkalinity (Speciated) Chloride (Dissolved) Fluoride pH Conductivity Sulphate (Dissolved) Total Dissolved Solids (TDS)	\ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \
Nutrients	1	1
Ammonia-N Nitrate (as N) Nitrite (as N) Nitrate/Nitrite (N+N)	\ \ \ \	√ √ √ √
Metals [incl. hardness, mercury, phosphorus,	sulfur]	,
Dissolved Metals Total Metals	√ -	√ √
Schedule E	3	
Volatile Organic Compounds (VOCs)		
VOCs	$\sqrt{}$	-
Petroleum Hydrocarbons	1	 I
Total VH (C6-C10) Total VPH (C6-C10) Less BTEX	√ √	-

Appendix G Field Parameters, Field Sample Keys and Laboratory Reports



GHD Field Sample Key (FSK)

Site CVRD - Campbell River Landfill (056484-52)

Q1 2019 EMP Sample Reason

N. Turl, C. Fick, D. Botero Sampler Name

GHD Ltd. Sampling Company

SSOW Reference Code :

Laboratory(s)		ALS Environme	ntal				_		Tempe	rature	рН	Eh / ORP		Conductivity		Turbidity		DO		TI	DS
Sample ID	Location	Sample Date (mm/dd/yyy)	Sample Time (hh:mm)	Sample Type	Sample Matrix	Grab or Composite	Parent Sample ID for Field Dups Footnote(s)	Volume of Water Purged (L)	Sample Temperature	Temperature Units	Field pH (s.u.)	Eh / ORP	Eh / ORP Units	Conductivity	Conductivity Units	Turbidity	Turbidity Units	Dissolved Oxygen	Dissolved Oxygen Units	Total Dissolved Solids	Total Dissolved Solids Units
GROUNDWATER																					
WG-56484-300419-NT-01	MW01-16	4/30/2019	12:00	N	WG	Grab		70	11.54	С	6.90	230	mV	68	uS/cm	3.3	ntu	-	mg/L	0.044	g/L
WG-56484-300419-NT-02	EBA11-2	4/30/2019	13:00	N	WG	Grab		160	11.31	С	7.54	155	mV	268	uS/cm	241	ntu	ı	mg/L	0.174	g/L
WG-56484-300419-CF-03	AG99-01	4/30/2019	14:30	N	WG	Grab		160	13.05	С	7.94	172	mV	175	uS/cm	9.8	ntu	ı	mg/L	0.114	g/L
WG-56484-300419-CF-04	EBA11-4	4/30/2019	15:45	N	WG	Grab		80	12.05	С	7.97	173	mV	116	uS/cm	17.8	ntu	ı	mg/L	0.075	g/L
WG-56484-300419-CF-05	EBA11-3	4/30/2019	16:45	N	WG	Grab		120	10.72	С	7.80	190	mV	128	uS/cm	28	ntu	-	mg/L	0.083	g/L
WG-56484-300419-NT-06	AG99-06	4/30/2019	15:30	N	WG	Grab		36	10.31	С	7.19	200	mV	142	uS/cm	117	ntu	-	mg/L	0.092	g/L
WG-56484-300419-CF-07	EBA04-7	4/30/2019	17:40	N	WG	Grab		68	10.49	С	6.99	190	mV	781	uS/cm	1.9	ntu	-	mg/L	0.500	g/L
WG-56484-300419-CF-08	EBA04-6	4/30/2019	17:50	N	WG	Grab		144	11.01	С	7.14	219	mV	618	uS/cm	0.0	ntu	-	mg/L	0.395	g/L
WG-56484-300419-NT-09	Trip Blank	4/30/2019	18:00	TB	WG	Grab		-	-	С	-	-	mV	-	uS/cm	-	ntu	-	mg/L	-	g/L
WG-56484-010519-NT-10	MW03-18	5/1/2019	10:00	N	WG	Grab		105	11.44	С	8.01	209	mV	144	uS/cm	0.4	ntu	-	mg/L	0.094	g/L
WG-56484-010519-NT-12	AG99-05	5/1/2019	10:40	N	WG	Grab		248	11.20	С	8.19	204	mV	194	uS/cm	1.7	ntu	-	mg/L	0.126	g/L
WG-56484-010519-CF-13	AG99-04	5/1/2019	13:30	N	WG	Grab		144	12.48	С	7.14	243	mV	96	uS/cm	0.0	ntu	-	mg/L	0.062	g/L
WG-56484-010519-CF-14	AG99-02	5/1/2019	15:30	N	WG	Grab		200	11.88	С	8.06	233	mV	145	uS/cm	0.0	ntu	-	mg/L	0.094	g/L
WG-56484-010519-NT-15	Field Blank	5/1/2019	15:45	FB	WG	Grab		-	-	С	-	-	mV	-	uS/cm	-	ntu	-	mg/L	-	g/L
WG-56484-010519-CF-16	MW02-18	5/1/2019	16:45	N	WG	Grab		100	11.74	С	6.98	76	mV	665	uS/cm	0.2	ntu	-	mg/L	0.426	g/L
WG-56484-010519-CF-17	MW02-18	5/1/2019	16:50	FD	WG	Grab	WG-56484-010519-CF-16	100	11.74	С	6.98	76	mV	665	uS/cm	0.2	ntu	-	mg/L	0.426	g/L
WG-56484-010519-CF-18	EBA11-1	5/1/2019	17:30	N	WG	Grab		80	9.70	С	7.68	146	mV	297	uS/cm	8.2	ntu	-	mg/L	0.193	g/L
WG-56484-010519-CF-19	EBA11-1	5/1/2019	17:40	FD	WG	Grab	WG-56484-010519-CF-18	80	9.70	С	7.68	146	mV	297	uS/cm	8.2	ntu	-	mg/L	0.193	g/L
WG-56484-010519-CF-20	HBT94-1	5/1/2019	18:00	N	WG	Grab		23	15.20	С	7.01	-19	mV	423	uS/cm	4.8	ntu	-	mg/L	0.275	g/L
WG-56484-010519-CF-21	HBT94-2	5/1/2019	18:30	N	WG	Grab		128	12.04	С	7.53	-55	mV	217	uS/cm	21.6	ntu	-	mg/L	0.141	g/L
SURFACE WATER																					
WS-56484-010519-CF-01	SW-1	5/1/2019	10:55	N	WG	Grab		-	11.74	С	5.51	274	mV	36	uS/cm	0.2	ntu	5.64	mg/L	0.023	g/L
WS-56484-010519-CF-02	SW-1	5/1/2019	11:00	FD	WG	Grab	WS-56484-010519-CF-01	-	11.74	С	5.51	274	mV	36	uS/cm	0.2	ntu	5.64	mg/L	0.023	g/L
WS-56484-010519-CF-03	SW03-17	5/1/2019	10:30	N	WG	Grab		-	14.13	С	6.07	243	mV	36	uS/cm	0.0	ntu	7.56	mg/L	0.023	g/L



GHD Limited

ATTN: Airesse MacPhee 10271 Shellbridge Way

Richmond, BC V6X 2W8

Date Received: 02-MAY-19

Report Date: 07-JUN-19 11:28 (MT)

Version: FINAL REV. 2

Client Phone: 604-248-3661

Certificate of Analysis

Lab Work Order #: L2266674

Project P.O. #: 056484 Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Campbell River (Phase 02) and Schedule B

Comments: ADDITIONAL 30-MAY-19 12:53

VOC/VPH analyses for GW sample #10 and all analyses from sample #11 have been omitted from the

attached submission.

4-JUN-2019 Sample WG-56484-010519-NT-12 is included in the attached report.

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700

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Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-1 WG-56484-300419-NT-01 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 12:00 Matrix: WG							
Physical Tests							
Conductivity	75.9		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	34.2		0.50	mg/L		03-MAY-19	
рН	7.75		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	55		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	33.6		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	33.6		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	2.19		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.0364		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.28		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (Al)-Dissolved	0.0032		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00200		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	11.0		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	1.63		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.00014		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000125		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.156		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-1 WG-56484-300419-NT-01 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 12:00 Matrix: WG							
Dissolved Metals							
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000079		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	3.62		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	1.06		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0159		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	0.91		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00125		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-1 WG-56484-300419-NT-01 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 12:00 WG							
Volatile Organic Compounds							
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	08-MAY-19	R4622305
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	08-MAY-19	
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Xylenes	<0.00075		0.00075	mg/L		08-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	116.8		70-130	%		08-MAY-19	R4622305
Surrogate: 1,4-Difluorobenzene (SS)	102.4		70-130	%		08-MAY-19	R4622305
Hydrocarbons				,,			
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4622291
VPH (C6-C10)	<0.10		0.10	mg/L		09-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	95.4		70-130	%		09-MAY-19	R4622291
L2266674-2 WG-56484-300419-NT-02 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 13:00 WG							
Physical Tests							
Conductivity	287		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	142		0.50	mg/L		03-MAY-19	
рН	8.20		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	197		20	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	146		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	146		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	5.09		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.953		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.20		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834

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

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Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-2 WG-56484-300419-NT-02 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 13:00 Matrix: WG							
Dissolved Metals							
Aluminum (AI)-Dissolved	0.0033		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00711		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	0.016		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	37.4		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00254		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	11.9		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000057		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.500		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00035		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000139		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	8.69		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	4.76		0.050	mg/L	02-MAY-19	03-MAY-19	
Strontium (Sr)-Dissolved	0.0751		0.00020	mg/L	02-MAY-19		R4622214
Sulfur (S)-Dissolved	0.85		0.50	mg/L	02-MAY-19	03-MAY-19	
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19		R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19		R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19		R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19		R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19		R4622214
Uranium (U)-Dissolved	0.000228		0.000010	mg/L	02-MAY-19		R4622214
Vanadium (V)-Dissolved	0.00302		0.00050	mg/L	02-MAY-19		R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266674-3 WG-56484-300419-CF-03							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-3 WG-56484-300419-CF-03 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 14:30 Matrix: WG							
Physical Tests							
Conductivity	191		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	93.3		0.50	mg/L		03-MAY-19	
pH	8.19		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	124		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	99.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	99.0		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	1.66		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.175		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.69		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (Al)-Dissolved	0.0027		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00089		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00172		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	< 0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	29.9		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00044		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	4.53		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000122		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.706		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-3 WG-56484-300419-CF-03 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 14:30 WG WG							
Dissolved Metals							
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000104		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	6.09		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.00		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0473		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	1.06		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000079		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00607		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.00000	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.00060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266674-4 WG-56484-300419-CF-04 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:45 WG							
Physical Tests							
Conductivity	128		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	55.5		0.50	mg/L		03-MAY-19	
pH	7.98		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	84		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	51.9		1.0	mg/L		04-MAY-19	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	51.9		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	7.53		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.229		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.00		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (Al)-Dissolved	0.372		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00199		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-4 WG-56484-300419-CF-04 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:45 Matrix: WG							
Dissolved Metals							
Barium (Ba)-Dissolved	0.00432		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	16.8		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00211		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	0.00030		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	0.00182		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	0.427		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	3.27		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.0117		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000074		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	0.108		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	1.03		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000296		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	6.53		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	3.01		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0307		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	0.77		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	0.0185		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000295		0.000010	mg/L	02-MAY-19	03-MAY-19	
Vanadium (V)-Dissolved	0.0189		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	0.0012		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	0.000328		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19		R4622305
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-4 WG-56484-300419-CF-04 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:45 Matrix: WG							
Volatile Organic Compounds							
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	08-MAY-19	R4622305
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	08-MAY-19	R4622305
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Xylenes	<0.00075		0.00075	mg/L		08-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	116.9		70-130	%		08-MAY-19	R4622305
Surrogate: 1,4-Difluorobenzene (SS)	102.6		70-130	%		08-MAY-19	R4622305
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19		R4622291
VPH (C6-C10)	<0.10		0.10	mg/L		09-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	106.2		70-130	%		09-MAY-19	R4622291
L2266674-5 WG-56484-300419-CF-05							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-5 WG-56484-300419-CF-05 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 16:45 Matrix: WG							
Physical Tests							
Conductivity	135		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	64.4		0.50	mg/L		03-MAY-19	
рН	8.01		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	92		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	61.9		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	61.9		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	4.76		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.0662		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.98		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0016		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00058		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	20.6		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00043		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	3.12		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000147		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.299		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-5 WG-56484-300419-CF-05 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 16:45 WG							
Dissolved Metals							
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000136		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	4.46		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	1.71		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0336		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	1.07		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000045		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00367		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19		R4622305
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-5 WG-56484-300419-CF-05 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 16:45 WG							
Volatile Organic Compounds							
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19		R4622305
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	08-MAY-19	R4622305
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19		R4622305
Xylenes	<0.00075		0.00075	mg/L		08-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	118.8		70-130	%			R4622305
Surrogate: 1,4-Difluorobenzene (SS)	102.5		70-130	%			
Hydrocarbons	102.0		70 100	70		00 11/11/10	114022000
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4622291
VPH (C6-C10)	<0.10		0.10	mg/L		09-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	110.4		70-130	%		09-MAY-19	R4622291
L2266674-6 WG-56484-300419-NT-06 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:30 WG WG							
Physical Tests							
Conductivity	156		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	71.1		0.50	mg/L		03-MAY-19	
рН	8.02		0.10	pН		04-MAY-19	R4622925
Total Dissolved Solids	105		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	69.3		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	69.3		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	0.0845		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	7.33		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	0.024		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.283		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	0.0016		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	1.54		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-6 WG-56484-300419-NT-06 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:30 Matrix: WG							
Dissolved Metals							
Aluminum (Al)-Dissolved	0.0480		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00118		0.00010	mg/L	02-MAY-19	03-MAY-19	
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	
Cadmium (Cd)-Dissolved	0.0000327		0.0000050	mg/L	02-MAY-19		R4622214
Calcium (Ca)-Dissolved	22.2		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	02-MAY-19	03-MAY-19	
Chromium (Cr)-Dissolved	0.00078		0.00010	mg/L	02-MAY-19	03-MAY-19	
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19		R4622214
Copper (Cu)-Dissolved	0.00050		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	0.053		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	0.000060		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	3.78		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.00653		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000090		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.358		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00026		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000176		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	4.89		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.85		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0561		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	0.65		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	0.00025		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	0.00210		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000084		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00306		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
Volatile Organic Compounds							
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Bromoform <0.0010	19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305
Volatile Organic Compounds 0.00050 mg/L 08-MAY-19 <	19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305
Bromodichloromethane <0.0010 0.0010 mg/L 08-MAY-19 <	19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305
Bromoform <0.0010	19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305
Carbon Tetrachloride <0.00050 0.00050 mg/L 08-MAY-19	19 R4622305 19 R4622305 19 R4622305 19 R4622305 19 R4622305
Chlorobenzene <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-19 Dibromochloromethane <0.0010	19 R4622305 19 R4622305 19 R4622305 19 R4622305
Dibromochloromethane <0.0010 0.0010 mg/L 08-MAY-19 <	19 R4622305 19 R4622305 19 R4622305
Chloroethane <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-19 Chloroform <0.0010	19 R4622305 19 R4622305
Chloroform <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-19 Chloromethane <0.0050	19 R4622305
Chloromethane <0.0050 0.0050 mg/L 08-MAY-19 08-MAY-19 1,2-Dichlorobenzene <0.00050	
1,2-Dichlorobenzene <0.00050	19 R4622305
1,3-Dichlorobenzene <0.0010	
1,4-Dichlorobenzene <0.0010	19 R4622305
1,1-Dichloroethane <0.0010	19 R4622305
1,2-Dichloroethane <0.0010	19 R4622305
1,1-Dichloroethylene <0.0010	19 R4622305
cis-1,2-Dichloroethylene <0.0010	19 R4622305
trans-1,2-Dichloroethylene <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-19 Dichloromethane <0.0050 mg/L 08-MAY-19	19 R4622305
Dichloromethane <0.0050 0.0050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
	19 R4622305
1,2-Dichloropropane <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-	19 R4622305
	19 R4622305
cis-1,3-Dichloropropylene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-	19 R4622305
trans-1,3-Dichloropropylene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-	19 R4622305
1,3-Dichloropropene (cis & trans) <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-	19 R4622305
Ethylbenzene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Methyl t-butyl ether (MTBE) <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Styrene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
1,1,1,2-Tetrachloroethane <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-	19 R4622305
1,1,2,2-Tetrachloroethane <0.00020 0.00020 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Tetrachloroethylene <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Toluene <0.00045 0.00045 mg/L 08-MAY-19 08-MAY-	19 R4622305
1,1,1-Trichloroethane <0.0010 0.0010 mg/L 08-MAY-19 08-MAY-	19 R4622305
1,1,2-Trichloroethane <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-	19 R4622305
Trichloroethylene <0.0010 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Trichlorofluoromethane <0.0010 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Vinyl Chloride <0.00040	19 R4622305
ortho-Xylene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
meta- & para-Xylene <0.00050 0.00050 mg/L 08-MAY-19 08-MAY-19	19 R4622305
Xylenes <0.00075 0.00075 mg/L 08-MAY	19
Surrogate: 4-Bromofluorobenzene (SS) 120.4 70-130 % 08-MAY-	19 R4622305
	19 R4622305
Hydrocarbons	
Volatile Hydrocarbons (VH6-10) <0.10	

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-6 WG-56484-300419-NT-06 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 15:30 WG WG							
Hydrocarbons							
VPH (C6-C10)	<0.10		0.10	mg/L		09-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	117.1		70-130	%		09-MAY-19	R4622291
L2266674-7 WG-56484-300419-NT-07 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:40 Matrix: WG							
Physical Tests							
Conductivity	824		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	389		0.50	mg/L		03-MAY-19	
pH	7.97		0.10	pН		04-MAY-19	R4622925
Total Dissolved Solids	520		20	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	383		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	383		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	46.3		2.5	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.10	DLDS	0.10	mg/L		02-MAY-19	R4628697
Nitrate (as N)	1.04		0.025	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	14.1		1.5	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.0164		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	0.276		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	0.0000446		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	112		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	0.00055		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	0.00375		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	26.4		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.124		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-7 WG-56484-300419-NT-07 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:40 Matrix: WG							
Dissolved Metals							
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000085		0.000050	mg/L	02-MAY-19	03-MAY-19	
Nickel (Ni)-Dissolved	0.00170		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	2.28		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00106		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000057		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	12.4		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	32.0		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.301		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	6.00		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000852		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00171		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19		R4622305
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19		R4622305
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19		R4622305
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-7 WG-56484-300419-NT-07 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:40 WG WG							
Volatile Organic Compounds							
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	08-MAY-19	R4622305
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	08-MAY-19	R4622305
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Xylenes	<0.00075		0.00075	mg/L		08-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	120.3		70-130	%		08-MAY-19	R4622305
Surrogate: 1,4-Difluorobenzene (SS) Hydrocarbons	101.7		70-130	%		08-MAY-19	R4622305
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4622291
VPH (C6-C10)	<0.10		0.10	mg/L	00-1017-13	09-MAY-19	N4022291
Surrogate: 3,4-Dichlorotoluene (SS)	105.7		70-130	%		09-MAY-19	R4622291
L2266674-8 WG-56484-300419-NT-08 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:50 WG	100.7		70 100	70		00 19871 10	114022231
Physical Tests							
Conductivity	624		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	348		0.50	mg/L		03-MAY-19	
рН	8.09		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	397		20	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	342		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	342		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	3.9		2.5	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.10	DLDS	0.10	mg/L		02-MAY-19	R4628697
Nitrate (as N)	2.92		0.025	mg/L		02-MAY-19	R4628697

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

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L2266674-8 WG-56484-300419-NT-08 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:50 Matrix: WG Anions and Nutrients						
•						
Nitrite (as N)	0.0052	0.0050	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.3	1.5	mg/L		02-MAY-19	R4628697
Dissolved Metals						
Dissolved Mercury Filtration Location	FIELD				05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD				02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0010	0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00841	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050	0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	0.030	0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	0.0000120	0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	103	0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010	0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00128	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020	0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010	0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	< 0.000050	0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010	0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	22.1	0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.0000050	0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	< 0.000050	0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050	0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050	0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	1.50	0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00057	0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	<0.000050	0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	12.2	0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010	0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	7.84	0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.229	0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	1.27	0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020	0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010	0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030	0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010	0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-8 WG-56484-300419-NT-08 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 17:50 Matrix: WG							
Dissolved Metals							
Uranium (U)-Dissolved	0.000294		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00166		0.00050	mg/L	02-MAY-19	03-MAY-19	
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266674-9 WG-56484-300419-NT-09 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 18:00 Matrix: WG				-			
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	08-MAY-19	R4622305
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4622305
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	08-MAY-19	R4622305

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-9 WG-56484-300419-NT-09 Sampled By: N.Turl/C.Fick on 30-APR-19 @ 18:00 Matrix: WG							
Volatile Organic Compounds							
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4622305
Xylenes	<0.00075		0.00075	mg/L		08-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	117.4		70-130	%		08-MAY-19	R4622305
Surrogate: 1,4-Difluorobenzene (SS)	101.6		70-130	%		08-MAY-19	
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4622291
VPH (C6-C10)	<0.10		0.10	mg/L		09-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	74.3		70-130	%		09-MAY-19	R4622291
L2266674-10 WG-56484-010519-NT-10 Sampled By: N.Turl/C.Fick on 01-MAY-19 @ 10:00 Matrix: WG							
Physical Tests							
Conductivity	149		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	72.9		0.50	mg/L		03-MAY-19	
pH	8.13		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	96		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	74.9		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	74.9		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	1.39		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate (as N)	0.225		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	2.98		0.30	mg/L		02-MAY-19	R4628697
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0048		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00052		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00214		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	0.021		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	25.7		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00032		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-10 WG-56484-010519-NT-10 Sampled By: N.Turl/C.Fick on 01-MAY-19 @ 10:00 Matrix: WG							
Dissolved Metals							
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	2.12		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000199		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.570		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00022		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000167		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	4.35		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.75		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0441		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	1.16		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000050		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00259		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266674-11 WG-56484-010519-NT-12 Sampled By: N.Turl/C.Fick on 01-MAY-19 @ 10:40 WG WG							
Physical Tests							
Conductivity	200		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	101		0.50	mg/L		03-MAY-19	
рН	8.24		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	123		20	mg/L		04-MAY-19	R4624129
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	102		1.0	mg/L		04-MAY-19	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	102		1.0	mg/L		04-MAY-19	R4622925

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

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<0.0050 <0.050 3.87						
<0.050						
<0.050						
		0.0050	mg/L		05-MAY-19	R4623059
3.87		0.050	mg/L		02-MAY-19	R4628697
5.07		0.50	mg/L		02-MAY-19	R4628697
<0.020		0.020	mg/L		02-MAY-19	R4628697
0.0524		0.0050	mg/L		02-MAY-19	R4628697
<0.0010		0.0010	mg/L		02-MAY-19	R4628697
2.47		0.30	mg/L		02-MAY-19	R4628697
FIELD					05-MAY-19	R4622997
FIELD					02-MAY-19	R4621834
0.0031		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
0.00041		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
0.00141		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.0000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
34.2		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
0.00022		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
0.00055		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
< 0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
3.70		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
0.000111		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
0.529		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
0.000102		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
4.32		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
2.32		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
0.0525		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
0.96		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
	0.0524 <0.0010 2.47 FIELD FIELD 0.0031 <0.00010 0.00041 0.00141 <0.00010 <0.000050 <0.010 <0.000050 34.2 <0.00010 0.00022 <0.00010 0.00055 <0.010 <0.00055 <0.010 <0.000050 <0.0011 3.70 <0.00010 3.70 <0.00010 0.00050 0.00111 <0.00050 0.529 <0.00010 2.32 0.000010 2.32 0.0525 0.96	0.0524 <0.0010 2.47 FIELD FIELD 0.0031 <0.00010 0.00041 0.00141 <0.00010 <0.000050 <0.010 <0.000050 34.2 <0.00010 0.00022 <0.00010 0.00055 <0.010 <0.000050 <0.0010 3.70 <0.00010 3.70 <0.00010 <0.000050 <0.0011 <0.000050 <0.0011 <0.000050 <0.00010 2.000050 <0.0010 2.000050 <0.0010 2.000050 <0.0010 2.000050 <0.0050 0.00010 2.32 0.000010 2.32 0.0525 0.96	0.0524 0.0010 0.0010 2.47 0.30 FIELD FIELD 0.0031 0.0010 0.00010 0.00010 0.00010 0.00041 0.00010 0.00010 0.000050 0.000050 0.000050 <0.010	0.0524 0.0050 mg/L <0.0010	0.0524	0.0524 0.0050 mg/L 02-MAY-19 <0.0010

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2266674-11 WG-56484-010519-NT-12 Sampled By: N.Turl/C.Fick on 01-MAY-19 @ 10:40 Matrix: WG							
Dissolved Metals							
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000069		0.000010	mg/L	02-MAY-19	03-MAY-19	
Vanadium (V)-Dissolved	0.00292		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
2266674-12 WG-56484-010519-CF-13 N.Turl/C.Fick on 01-MAY-19 @ 13:30 WG							
Physical Tests							
Conductivity	100		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	47.1		0.50	mg/L		03-MAY-19	
рН	7.97		0.10	рН		04-MAY-19	
Total Dissolved Solids	65		13	mg/L		04-MAY-19	R4624129
Anions and Nutrients	40.0		4.0			04.848)/.40	D 4000005
Alkalinity, Bicarbonate (as CaCO3)	48.3		1.0	mg/L		04-MAY-19	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	
Alkalinity, Total (as CaCO3)	48.3		1.0	mg/L		04-MAY-19	
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		05-MAY-19	R4623059
Chloride (CI)	1.12		0.50	mg/L		02-MAY-19	
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	
Nitrate (as N)	0.0791		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	
Sulfate (SO4) Dissolved Metals	2.37		0.30	mg/L		02-MAY-19	R4628697
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4622997
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0049		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00048		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00073		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	16.2		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
` '	0.00026		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266674-12 WG-56484-010519-CF-13 Sampled By: N.Turl/C.Fick on 01-MAY-19 @ 13:30 Matrix: WG							
Dissolved Metals							
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	1.64		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	0.000136		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.291		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	0.000114		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	3.95		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	1.26		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0256		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	0.90		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	0.000027		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00326		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	1,1,1,2-Tetrachloroethane	LCS-ND	L2266674-1, -4, -5, -6, -7, -9
Laboratory Control Sample	Dibromochloromethane	LCS-ND	L2266674-1, -4, -5, -6, -7, -9
Laboratory Control Sample	Tetrachloroethylene	LCS-ND	L2266674-1, -4, -5, -6, -7, -9
Laboratory Control Sample	Trichloroethylene	LCS-ND	L2266674-1, -4, -5, -6, -7, -9
Laboratory Control Sample	Trichlorofluoromethane	LCS-ND	L2266674-1, -4, -5, -6, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2266674-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2266674-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2266674-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2266674-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8

Sample Parameter Qualifier key listed:

Qualifier	Description					
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.					
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.					
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-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity	

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity wher orbiduired during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), pres6% fith hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), plose with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

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

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Reference Information

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

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires interpreted 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.

VH-HSFID-VA VH in Water by Headspace GCFID BC Env. Lab Manual (VH in Water) Water

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Compounds eluting between n-hexane and n-decane are measured and summed together using flame-ionization detection.

VH-SURR-FID-VA Water VH Surrogates for Waters BC Env. Lab Manual (VH in Solids)

VOC-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents GEMSated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7-HSMS-VA BTEX/MTBE/Styrene by Headspace EPA 5021A/8260C Water

The water sample, with added reagents GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for EPA 5035A/5021A/8260C

Waters

VPH-CALC-VA Water VPH is VH minus select aromatics BC MOF VPH

VPHw measures Volatile Petroleum Hydrocarbons in water. Results are calculated by subtraction of specific Monocyclic Aromatic Hydrocarbons from

VH6-10, as per the BC Lab Manual VPH calculation procedure.

VPHw = VH6-10 minus Benzene, Toluene, Ethylbenzene, Xylenes, and Styrene

XYLENES-CALC-VA Water Sum of Xylene Isomer CALCULATION

Concentrations Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The

DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** 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

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA VA

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.



Workorder: L2266674 Report Date: 12-JUN-19 Page 1 of 14

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
	22925 CRM s CaCO3)	VA-ALK-TITR	- CONTROL 99.8		%		85-115	04-MAY-19
WG3040534-5 [Alkalinity, Total (as	OUP s CaCO3)	L2266674-1 33.6	34.2		mg/L	1.8	20	04-MAY-19
WG3040534-1 M Alkalinity, Total (as	MB s CaCO3)		<1.0		mg/L		1	04-MAY-19
BR-L-IC-N-VA	Water							
Batch R462 WG3040533-3 Description	28697 DUP	L2266674-1 N/A	<0.050	RPD-NA	mg/L	N/A	20	02-MAY-19
WG3040533-2 L Bromide (Br)	_cs		102.4		%		85-115	02-MAY-19
WG3040533-1 B romide (Br)	МВ		<0.050		mg/L		0.05	02-MAY-19
WG3040533-4 M Bromide (Br)	MS	L2266674-2	104.6		%		75-125	02-MAY-19
CL-IC-N-VA	Water							
Batch R462		1 0000074 4						
Chloride (CI)	DUP	L2266674-1 2.19	2.17		mg/L	0.9	20	02-MAY-19
WG3040533-2 L Chloride (CI)	_CS		100.7		%		90-110	02-MAY-19
WG3040533-1 N Chloride (CI)	МВ		<0.50		mg/L		0.5	02-MAY-19
WG3040533-4 M Chloride (CI)	MS	L2266674-2	100.7		%		75-125	02-MAY-19
EC-PCT-VA	Water							
	22925							
WG3040534-4 C Conductivity	CRM	VA-EC-PCT-C	99.8		%		90-110	04-MAY-19
WG3040534-5 [Conductivity	DUP	L2266674-1 75.9	76.9		uS/cm	1.3	10	04-MAY-19
WG3040534-1 N Conductivity	МВ		<2.0		uS/cm		2	04-MAY-19
F-IC-N-VA	Water							



Report Date: 12-JUN-19 Workorder: L2266674 Page 2 of 14

GHD Limited Client:

10271 Shellbridge Way Richmond, BC V6X 2W8

Contact: Airesse MacPhee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-VA	Water							
Batch R4628697 WG3040533-3 DUP Fluoride (F)		L2266674-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	02-MAY-19
WG3040533-2 LCS Fluoride (F)			101.5		%		90-110	02-MAY-19
WG3040533-1 MB Fluoride (F)			<0.020		mg/L		0.02	02-MAY-19
WG3040533-4 MS Fluoride (F)		L2266674-2	102.0		%		75-125	02-MAY-19
HG-D-CVAA-VA	Water							
Batch R4625253								
WG3042002-7 DUP Mercury (Hg)-Dissolved		L2266198-5 < 0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-MAY-19
WG3042002-6 LCS Mercury (Hg)-Dissolved			93.2		%		80-120	06-MAY-19
WG3042002-5 MB Mercury (Hg)-Dissolved			<0.0000050	:	mg/L		0.000005	06-MAY-19
WG3042002-8 MS Mercury (Hg)-Dissolved		L2266198-6	93.6		%		70-130	06-MAY-19
MET-D-CCMS-VA	Water							
Batch R4622214								
WG3040605-3 DUP Aluminum (AI)-Dissolved	d	L2266674-1 0.0032	0.0025	J	mg/L	0.0007	0.002	03-MAY-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	0.0007 N/A	20	03-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Barium (Ba)-Dissolved		0.00200	0.00206		mg/L	2.6	20	03-MAY-19
Beryllium (Be)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAY-19
Cadmium (Cd)-Dissolve	d	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-MAY-19
Calcium (Ca)-Dissolved		11.0	11.2		mg/L	1.5	20	03-MAY-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Chromium (Cr)-Dissolve	ed	0.00016	0.00016		mg/L	1.5	20	03-MAY-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-MAY-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAY-19



Workorder: L2266674 Report Date: 12-JUN-19 Page 3 of 14

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4622214	ļ							
WG3040605-3 DUP Lithium (Li)-Dissolved		L2266674-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAY-19
Magnesium (Mg)-Disso	olved	1.63	1.62		mg/L	0.4	20	03-MAY-19
Manganese (Mn)-Disso	olved	0.00014	0.00015		mg/L	3.9	20	03-MAY-19
Molybdenum (Mo)-Diss	solved	0.000125	0.000129		mg/L	3.0	20	03-MAY-19
Nickel (Ni)-Dissolved		< 0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAY-19
Phosphorus (P)-Dissolv	ved	< 0.050	<0.050	RPD-NA	mg/L	N/A	20	03-MAY-19
Potassium (K)-Dissolve	ed	0.156	0.156		mg/L	0.2	20	03-MAY-19
Rubidium (Rb)-Dissolve	ed	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-MAY-19
Selenium (Se)-Dissolve	ed	0.000079	0.000067		mg/L	17	20	03-MAY-19
Silicon (Si)-Dissolved		3.62	3.55		mg/L	1.8	20	03-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Sodium (Na)-Dissolved		1.06	1.04		mg/L	1.9	20	03-MAY-19
Strontium (Sr)-Dissolve	ed	0.0159	0.0159		mg/L	0.2	20	03-MAY-19
Sulfur (S)-Dissolved		0.91	0.84		mg/L	7.7	20	03-MAY-19
Tellurium (Te)-Dissolve	ed	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-MAY-19
Thallium (TI)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Thorium (Th)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Titanium (Ti)-Dissolved	I	<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	03-MAY-19
Tungsten (W)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Vanadium (V)-Dissolve	d	0.00125	0.00124		mg/L	0.1	20	03-MAY-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAY-19
Zirconium (Zr)-Dissolve	ed	<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	03-MAY-19
WG3040605-2 LCS								
Aluminum (AI)-Dissolve			104.0		%		80-120	03-MAY-19
Antimony (Sb)-Dissolve	ed		99.7		%		80-120	03-MAY-19
Arsenic (As)-Dissolved			98.5		%		80-120	03-MAY-19
Barium (Ba)-Dissolved			102.2		%		80-120	03-MAY-19
Beryllium (Be)-Dissolve			99.2		%		80-120	03-MAY-19
Bismuth (Bi)-Dissolved			102.5		%		80-120	03-MAY-19
Boron (B)-Dissolved			96.0		%		80-120	03-MAY-19
Cadmium (Cd)-Dissolve	ed		101.1		%		80-120	03-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R462221	4							
WG3040605-2 LCS					0/			
Calcium (Ca)-Dissolve			100.5		%		80-120	03-MAY-19
Cesium (Cs)-Dissolved			101.0		%		80-120	03-MAY-19
Chromium (Cr)-Dissolv			101.2		%		80-120	03-MAY-19
Cobalt (Co)-Dissolved			99.1		%		80-120	03-MAY-19
Copper (Cu)-Dissolved	d		101.0		%		80-120	03-MAY-19
Iron (Fe)-Dissolved			96.0		%		80-120	03-MAY-19
Lead (Pb)-Dissolved			99.6		%		80-120	03-MAY-19
Lithium (Li)-Dissolved			95.9		%		80-120	03-MAY-19
Magnesium (Mg)-Diss			105.5		%		80-120	03-MAY-19
Manganese (Mn)-Diss			101.7		%		80-120	03-MAY-19
Molybdenum (Mo)-Dis	solved		97.6		%		80-120	03-MAY-19
Nickel (Ni)-Dissolved			100.8		%		80-120	03-MAY-19
Phosphorus (P)-Disso			103.5		%		70-130	03-MAY-19
Potassium (K)-Dissolv			100.7		%		80-120	03-MAY-19
Rubidium (Rb)-Dissolv	red		101.4		%		80-120	03-MAY-19
Selenium (Se)-Dissolv	ed		99.2		%		80-120	03-MAY-19
Silicon (Si)-Dissolved			94.6		%		60-140	03-MAY-19
Silver (Ag)-Dissolved			97.1		%		80-120	03-MAY-19
Sodium (Na)-Dissolved	b		107.7		%		80-120	03-MAY-19
Strontium (Sr)-Dissolve	ed		99.3		%		80-120	03-MAY-19
Sulfur (S)-Dissolved			103.1		%		80-120	03-MAY-19
Tellurium (Te)-Dissolv	ed		95.8		%		80-120	03-MAY-19
Thallium (TI)-Dissolved	b		99.4		%		80-120	03-MAY-19
Thorium (Th)-Dissolve	d		98.4		%		80-120	03-MAY-19
Tin (Sn)-Dissolved			96.7		%		80-120	03-MAY-19
Titanium (Ti)-Dissolve	d		94.2		%		80-120	03-MAY-19
Tungsten (W)-Dissolve	ed		98.1		%		80-120	03-MAY-19
Uranium (U)-Dissolved	d		101.6		%		80-120	03-MAY-19
Vanadium (V)-Dissolve	ed		101.7		%		80-120	03-MAY-19
Zinc (Zn)-Dissolved			101.0		%		80-120	03-MAY-19
Zirconium (Zr)-Dissolv	ed		94.6		%		80-120	03-MAY-19
WG3040605-1 MB								
Aluminum (Al)-Dissolv			<0.0010		mg/L		0.001	03-MAY-19
Antimony (Sb)-Dissolv	ed		<0.00010		mg/L		0.0001	03-MAY-19



Workorder: L2266674 Report Date: 12-JUN-19 Page 5 of 14

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R46	22214							
	MB		0.00040				0.0004	
Arsenic (As)-Diss			<0.00010		mg/L		0.0001	03-MAY-19
Barium (Ba)-Diss			<0.00010		mg/L		0.0001	03-MAY-19
Beryllium (Be)-Di			<0.00010		mg/L		0.0001	03-MAY-19
Bismuth (Bi)-Diss			<0.000050)	mg/L		0.00005	03-MAY-19
Boron (B)-Dissolv			<0.010		mg/L		0.01	03-MAY-19
Cadmium (Cd)-D			<0.000005	5C	mg/L		0.000005	03-MAY-19
Calcium (Ca)-Dis			<0.050		mg/L		0.05	03-MAY-19
Cesium (Cs)-Diss			<0.000010)	mg/L		0.00001	03-MAY-19
Chromium (Cr)-D			<0.00010		mg/L		0.0001	03-MAY-19
Cobalt (Co)-Disso			<0.00010		mg/L		0.0001	03-MAY-19
Copper (Cu)-Diss	solved		<0.00020		mg/L		0.0002	03-MAY-19
Iron (Fe)-Dissolve	ed		<0.010		mg/L		0.01	03-MAY-19
Lead (Pb)-Dissol	ved		<0.000050)	mg/L		0.00005	03-MAY-19
Lithium (Li)-Disso	olved		<0.0010		mg/L		0.001	03-MAY-19
Magnesium (Mg)	-Dissolved		<0.0050		mg/L		0.005	03-MAY-19
Manganese (Mn)	-Dissolved		<0.00010		mg/L		0.0001	03-MAY-19
Molybdenum (Mo)-Dissolved		<0.000050)	mg/L		0.00005	03-MAY-19
Nickel (Ni)-Dissol	ved		<0.00050		mg/L		0.0005	03-MAY-19
Phosphorus (P)-[Dissolved		< 0.050		mg/L		0.05	03-MAY-19
Potassium (K)-Di	ssolved		< 0.050		mg/L		0.05	03-MAY-19
Rubidium (Rb)-D	issolved		<0.00020		mg/L		0.0002	03-MAY-19
Selenium (Se)-Di	ssolved		<0.000050)	mg/L		0.00005	03-MAY-19
Silicon (Si)-Disso	lved		< 0.050		mg/L		0.05	03-MAY-19
Silver (Ag)-Disso	lved		<0.000010)	mg/L		0.00001	03-MAY-19
Sodium (Na)-Diss	solved		< 0.050		mg/L		0.05	03-MAY-19
Strontium (Sr)-Di	ssolved		<0.00020		mg/L		0.0002	03-MAY-19
Sulfur (S)-Dissolv	/ed		<0.50		mg/L		0.5	03-MAY-19
Tellurium (Te)-Di	ssolved		<0.00020		mg/L		0.0002	03-MAY-19
Thallium (TI)-Diss	solved		<0.000010)	mg/L		0.00001	03-MAY-19
Thorium (Th)-Dis	solved		<0.00010		mg/L		0.0001	03-MAY-19
Tin (Sn)-Dissolve	ed		<0.00010		mg/L		0.0001	03-MAY-19
Titanium (Ti)-Diss	solved		<0.00030		mg/L		0.0003	03-MAY-19
Tungsten (W)-Dis	ssolved		<0.00010		mg/L		0.0001	03-MAY-19
								-



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4622214	1							
WG3040605-1 MB Uranium (U)-Dissolved			<0.00001	0	mg/L		0.00001	03-MAY-19
Vanadium (V)-Dissolve	ed		<0.00050)	mg/L		0.0005	03-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-MAY-19
Zirconium (Zr)-Dissolve	ed		<0.00006	0	mg/L		0.00006	03-MAY-19
WG3040605-4 MS Aluminum (Al)-Dissolve	ed	L2266674-2	100.3		%		70-130	03-MAY-19
Antimony (Sb)-Dissolve	ed		102.3		%		70-130	03-MAY-19
Arsenic (As)-Dissolved			109.5		%		70-130	03-MAY-19
Barium (Ba)-Dissolved			107.0		%		70-130	03-MAY-19
Beryllium (Be)-Dissolve	ed		101.7		%		70-130	03-MAY-19
Bismuth (Bi)-Dissolved			98.6		%		70-130	03-MAY-19
Boron (B)-Dissolved			98.8		%		70-130	03-MAY-19
Cadmium (Cd)-Dissolv	red		104.1		%		70-130	03-MAY-19
Calcium (Ca)-Dissolve	d		N/A	MS-B	%		-	03-MAY-19
Cesium (Cs)-Dissolved	i		106.6		%		70-130	03-MAY-19
Chromium (Cr)-Dissolv	ved .		99.8		%		70-130	03-MAY-19
Cobalt (Co)-Dissolved			98.1		%		70-130	03-MAY-19
Copper (Cu)-Dissolved	I		99.9		%		70-130	03-MAY-19
Iron (Fe)-Dissolved			97.7		%		70-130	03-MAY-19
Lead (Pb)-Dissolved			101.2		%		70-130	03-MAY-19
Lithium (Li)-Dissolved			94.3		%		70-130	03-MAY-19
Magnesium (Mg)-Disso	olved		N/A	MS-B	%		-	03-MAY-19
Manganese (Mn)-Disso	olved		99.99		%		70-130	03-MAY-19
Molybdenum (Mo)-Diss	solved		99.5		%		70-130	03-MAY-19
Nickel (Ni)-Dissolved			100.4		%		70-130	03-MAY-19
Phosphorus (P)-Dissol	ved		106.9		%		70-130	03-MAY-19
Potassium (K)-Dissolve	ed		98.5		%		70-130	03-MAY-19
Rubidium (Rb)-Dissolv	ed		104.8		%		70-130	03-MAY-19
Selenium (Se)-Dissolve	ed		112.0		%		70-130	03-MAY-19
Silicon (Si)-Dissolved			89.6		%		70-130	03-MAY-19
Silver (Ag)-Dissolved			102.5		%		70-130	03-MAY-19
Sodium (Na)-Dissolved	d		N/A	MS-B	%		-	03-MAY-19
Strontium (Sr)-Dissolve	ed		N/A	MS-B	%		-	03-MAY-19
Sulfur (S)-Dissolved			104.2		%		70-130	03-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4622214 WG3040605-4 MS		L2266674-2						
Tellurium (Te)-Dissolved	i		111.1		%		70-130	03-MAY-19
Thallium (TI)-Dissolved			101.9		%		70-130	03-MAY-19
Thorium (Th)-Dissolved			103.4		%		70-130	03-MAY-19
Tin (Sn)-Dissolved			100.3		%		70-130	03-MAY-19
Titanium (Ti)-Dissolved			98.5		%		70-130	03-MAY-19
Tungsten (W)-Dissolved			102.1		%		70-130	03-MAY-19
Uranium (U)-Dissolved			103.4		%		70-130	03-MAY-19
Vanadium (V)-Dissolved			103.1		%		70-130	03-MAY-19
Zinc (Zn)-Dissolved			103.8		%		70-130	03-MAY-19
Zirconium (Zr)-Dissolved	i		96.6		%		70-130	03-MAY-19
NH3-F-VA	Water							
Batch R4623059								
WG3041807-3 DUP Ammonia, Total (as N)		L2266674-1 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	05-MAY-19
WG3041807-2 LCS Ammonia, Total (as N)			94.3		%		85-115	05-MAY-19
WG3041807-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	05-MAY-19
WG3041807-4 MS Ammonia, Total (as N)		L2266674-2	90.2		%		75-125	05-MAY-19
NO2-L-IC-N-VA	Water							
Batch R4628697								
WG3040533-3 DUP Nitrite (as N)		L2266674-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-MAY-19
WG3040533-2 LCS Nitrite (as N)			101.0		%		90-110	02-MAY-19
WG3040533-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	02-MAY-19
WG3040533-4 MS Nitrite (as N)		L2266674-2	100.2		%		75-125	02-MAY-19
NO3-L-IC-N-VA	Water							
Batch R4628697 WG3040533-3 DUP Nitrate (as N)		L2266674-1 0.0364	0.0367		mg/L	0.6	20	02-MAY-19
WG3040533-2 LCS								



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA	Water							
Batch R4628697								
WG3040533-2 LCS Nitrate (as N)			101.9		%		90-110	02-MAY-19
WG3040533-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	02-MAY-19
WG3040533-4 MS Nitrate (as N)		L2266674-2	97.7		%		75-125	02-MAY-19
PH-PCT-VA	Water							
Batch R4622925 WG3040534-2 CRM pH		VA-PH7-BUF	6.99		рН		6074	04 MAY 10
WG3040534-5 DUP		L2266674-1	0.55		рп		6.9-7.1	04-MAY-19
pH		7.75	7.74	J	рН	0.01	0.3	04-MAY-19
SO4-IC-N-VA	Water							
Batch R4628697								
WG3040533-3 DUP Sulfate (SO4)		L2266674-1 2.28	2.26		mg/L	0.8	20	02-MAY-19
WG3040533-2 LCS Sulfate (SO4)			101.2		%		90-110	02-MAY-19
WG3040533-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	02-MAY-19
WG3040533-4 MS Sulfate (SO4)		L2266674-2	99.9		%		75-125	02-MAY-19
TDS-VA	Water							
Batch R4624129								
WG3041855-3 DUP Total Dissolved Solids		L2266674-2 197	203		mg/L	3.0	20	04-MAY-19
WG3041855-2 LCS Total Dissolved Solids			99.5		%		85-115	04-MAY-19
WG3041855-1 MB Total Dissolved Solids			<10		mg/L		10	04-MAY-19
VH-HSFID-VA	Water							
Batch R4622291								
WG3044486-3 DUP Volatile Hydrocarbons (\)	VH6-10)	L2267842-11 <0.10	<0.10	RPD-NA	mg/L	N/A	30	09-MAY-19
WG3044486-2 LCS Volatile Hydrocarbons (\	√H6-10)		73.0		%		70-130	09-MAY-19
WG3044486-1 MB								



Qualifier

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RPD

Limit

Analyzed

Units

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Matrix

Reference

Result

Contact: Airesse MacPhee

Test

	Matrix	11010101100	rtocurt	quaiiioi	• · · · · ·			7 illary20a
VH-HSFID-VA	Water							
Batch R4622	291							
WG3044486-1 Mi Volatile Hydrocarbo			<0.10		mg/L		0.1	09-MAY-19
VOC-HSMS-VA	Water							
Batch R4622	305							
WG3044486-3 DI Bromodichlorometh	U P lane	L2267842-11 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Bromoform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Carbon Tetrachloric	de	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Chlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Dibromochlorometh	nane	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Chloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	09-MAY-19
Chloroform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Chloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	09-MAY-19
1,2-Dichlorobenzen	е	< 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
1,3-Dichlorobenzen	е	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,4-Dichlorobenzen	е	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1-Dichloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,2-Dichloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1-Dichloroethylen	е	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
cis-1,2-Dichloroethy	/lene	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
trans-1,2-Dichloroet	thylene	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Dichloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	09-MAY-19
1,2-Dichloropropane	е	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
cis-1,3-Dichloroprop	oylene	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
trans-1,3-Dichloropi	ropylene	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1,1,2-Tetrachloroe	ethane	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1,2,2-Tetrachloroe	ethane	<0.00020	<0.00020	RPD-NA	mg/L	N/A	30	09-MAY-19
Tetrachloroethylene	•	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1,1-Trichloroethar	ne	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
1,1,2-Trichloroethar	ne	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Trichloroethylene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	09-MAY-19
Trichlorofluorometh	ane	<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	09-MAY-19
Vinyl Chloride		<0.00040	<0.00040	RPD-NA	mg/L	N/A	50	09-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Note	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3044486-2 LCS Bromodichloromethane 118.0 % 70-130 08-MAY-19 Bromoform 111.4 % 70-130 08-MAY-19 Carbon Tetrachloride 121.6 % 70-130 08-MAY-19 Chlorobenzane 108.6 % 70-130 08-MAY-19 Dibromochloromethane 137.8 LCS-ND % 70-130 08-MAY-19 Chloroform 119.1 % 60-140 08-MAY-19 Chloroform 119.1 % 60-140 08-MAY-19 L2-Dichlorobenzene 107.8 % 60-140 08-MAY-19 1.2-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1.4-Dichlorobenzene 111.8 % 70-130 08-MAY-19 1.4-Dichlorobenzene 111.8 % 70-130 08-MAY-19 1.4-Dichlorobenzene 115.0 % 70-130 08-MAY-19 1.4-Dichlorobenzene 122.0 % 70-130 08-MAY-19 1.1-Dichlorobethane 122.0 %	VOC-HSMS-VA	Water							
Bromotion	Batch R4622305								
Bromoform				118 N		%		70 120	00 MAV 40
Carbon Tetrachloride 121.6 % 70-130 08-MAY-19 Chlorobenzene 108.6 % 70-130 08-MAY-19 Dibromochloromethane 137.8 LCS-ND % 70-130 08-MAY-19 Chloroethane 93.4 % 60-140 08-MAY-19 Chloroform 119.1 % 70-130 08-MAY-19 Chloromethane 97.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 1108.0 % 70-130 08-MAY-19 1,4-Dichloroebrane 115.0 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 112.5 % 70-130 08-MAY-19 1,1-2-Dichloropropiqene 19.9 % 60-140									
Chlorobenzene 108.6 % 70-130 08-MAY-19 Dibromochloromethane 137.8 LCS-ND % 70-130 08-MAY-19 Chloroethane 93.4 % 60-140 08-MAY-19 Chloroform 119.1 % 70-130 08-MAY-19 Chloromethane 97.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichloroethane 115.0 % 70-130 08-MAY-19 1,1-Dichloroethane 115.7 % 70-130 08-MAY-19 1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 dis-1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 trans-1,3-Dichloroethylene 117.0 % 70-130 08-MAY-19 Dichloropropale 106.8 % 70-1									
Dibromochloromethane 137.8 LCS-ND % 70-130 08-MAY-19 Chloroethane 93.4 % 60-140 08-MAY-19 Chloroform 119.1 % 70-130 08-MAY-19 Chloromethane 17.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichlorobenzene 111.8 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,1-Dichloroethane 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 cis-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloropropane 106.8 % 70-130 08-MAY-19 cis-1,3-Dichloropropylene 98.1 % </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
Chloroethane 93.4 % 60.140 08-MAY-19 Chloroform 119.1 % 70-130 08-MAY-19 Chloromethane 97.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichloroethane 111.8 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,2-Dichloroethane 122.0 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 112.5 % 70-130 08-MAY-19 is-1,3-Dichloroethylene 117.0 % 70-130 08-MAY-19 is-1,3-Dichloropropane 106.8 % 70-130 08-MAY-19 1,2-Dichloropropale 106.8 % 70-130 08-MAY-19 1,2-Dichloropropylene 99.9 % 70-130					LCS-ND				
Chloroform 119.1 % 70-130 08-MAY-19 Chloromethane 97.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichloroethane 111.8 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 112.5 % 70-130 08-MAY-19 trans-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloropropane 106.8 % 70-130 08-MAY-19 1,2-Dichloropropane 106.8 % 70-130 08-MAY-19 trans-1,3-Dichloropropylene 98.1 % 70-130 08-MAY-19 trans-1,3-Dichloropropylene 98.1 %					LCO-ND				
Chloromethane 97.4 % 60-140 08-MAY-19 1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichlorobenzene 111.8 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 1,1-Dichloroethylene 115.7 % 70-130 08-MAY-19 cis-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloropropylene 119.9 % 60-140 08-MAY-19 1,2-Dichloropropylene 199.9 % 70-130 08-MAY-19 trans-1,3-Dichloropropylene 98.1 % 70-130 08-MAY-19 trans-1,3-Dichloropropylene 98.1 % 70-130 08-MAY-19 1,1,1-2-Tetrachloroethane 131.9									
1,2-Dichlorobenzene 107.8 % 70-130 08-MAY-19 1,3-Dichlorobenzene 108.0 % 70-130 08-MAY-19 1,4-Dichlorobenzene 111.8 % 70-130 08-MAY-19 1,1-Dichloroethane 115.0 % 70-130 08-MAY-19 1,2-Dichloroethane 115.7 % 70-130 08-MAY-19 dis-1,2-Dichloroethylene 115.7 % 70-130 08-MAY-19 dis-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 trans-1,2-Dichloroethylene 117.0 % 70-130 08-MAY-19 Dichloromethane 119.9 % 60-140 08-MAY-19 1,2-Dichloropropylene 106.8 % 70-130 08-MAY-19 dis-1,3-Dichloropropylene 99.9 % 70-130 08-MAY-19 trans-1,3-Dichloropropylene 98.1 % 70-130 08-MAY-19 1,1,1,2-Tetrachloroethane 131.9 LCS-ND 70-130 08-MAY-19 1,1,1,2-Tetrachloroethane 147.9 LCS-ND 70-130 08-MAY-19 1,1,1-Trichloroethane<									
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Vinyl Chloride 100.6 % 60-140 08-MAY-19 WG3044486-1 MB WG3044486-1 MB WG3044486-1 MB WG3044486-1 MG304 M	Trichloroethylene			145.1	LCS-ND	%		70-130	
Vinyl Chloride 100.6 % 60-140 08-MAY-19 WG3044486-1 MB MB MB MB/L 0.001 08-MAY-19 Bromodichloromethane <0.0010 mg/L 0.001 08-MAY-19 Carbon Tetrachloride <0.00050 mg/L 0.0005 08-MAY-19 Chlorobenzene <0.0010 mg/L 0.001 08-MAY-19	Trichlorofluoromethane			169.2	LCS-ND	%		60-140	08-MAY-19
Bromodichloromethane <0.0010 mg/L 0.001 08-MAY-19 Bromoform <0.0010	Vinyl Chloride			100.6		%		60-140	
Bromoform <0.0010 mg/L 0.001 08-MAY-19 Carbon Tetrachloride <0.00050	WG3044486-1 MB								
Carbon Tetrachloride <0.00050 mg/L 0.0005 08-MAY-19 Chlorobenzene <0.0010	Bromodichloromethane			<0.0010		mg/L		0.001	08-MAY-19
Chlorobenzene <0.0010 mg/L 0.001 08-MAY-19	Bromoform			<0.0010		mg/L		0.001	08-MAY-19
· · · · · · · · · · · · · · · · · · ·	Carbon Tetrachloride			<0.00050)	mg/L		0.0005	08-MAY-19
Dibromochloromethane <0.0010 mg/L 0.001 08-MAY-19	Chlorobenzene			<0.0010		mg/L		0.001	08-MAY-19
	Dibromochloromethane			<0.0010		mg/L		0.001	08-MAY-19



Workorder: L2266674 Report Date: 12-JUN-19 Page 11 of 14

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4622305	5							
WG3044486-1 MB Chloroethane			<0.0010		mg/L		0.001	00 MAN/ 40
Chloroform			<0.0010		mg/L		0.001	08-MAY-19
Chloromethane			<0.0010		mg/L		0.005	08-MAY-19 08-MAY-19
1,2-Dichlorobenzene			<0.0050		mg/L		0.005	
1,3-Dichlorobenzene			<0.0010		mg/L		0.0003	08-MAY-19 08-MAY-19
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	08-MAY-19
1,1-Dichloroethane			<0.0010		mg/L		0.001	08-MAY-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	08-MAY-19
1,1-Dichloroethylene			<0.0010		mg/L		0.001	08-MAY-19
cis-1,2-Dichloroethylen	e		<0.0010		mg/L		0.001	08-MAY-19
trans-1,2-Dichloroethyle			<0.0010		mg/L		0.001	08-MAY-19
Dichloromethane			< 0.0050		mg/L		0.005	08-MAY-19
1,2-Dichloropropane			<0.0010		mg/L		0.001	08-MAY-19
cis-1,3-Dichloropropyle	ene		<0.00050		mg/L		0.0005	08-MAY-19
trans-1,3-Dichloropropy			<0.00050		mg/L		0.0005	08-MAY-19
1,1,1,2-Tetrachloroetha	ane		<0.0010		mg/L		0.001	08-MAY-19
1,1,2,2-Tetrachloroetha	ane		<0.00020		mg/L		0.0002	08-MAY-19
Tetrachloroethylene			<0.0010		mg/L		0.001	08-MAY-19
1,1,1-Trichloroethane			<0.0010		mg/L		0.001	08-MAY-19
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	08-MAY-19
Trichloroethylene			<0.0010		mg/L		0.001	08-MAY-19
Trichlorofluoromethane	e		<0.0010		mg/L		0.001	08-MAY-19
Vinyl Chloride			<0.00040		mg/L		0.0004	08-MAY-19
VOC7-HSMS-VA	Water							
Batch R4622305	5							
WG3044486-3 DUP		L2267842-11						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Methyl t-butyl ether (M	ГВЕ)	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Styrene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
Toluene		< 0.00045	<0.00045	RPD-NA	mg/L	N/A	30	09-MAY-19
meta- & para-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
ortho-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	09-MAY-19
WG3044486-2 LCS								



Workorder: L2266674 Report Date: 12-JUN-19 Page 12 of 14

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
Batch R46223	05							
WG3044486-2 LC	S				0.4			
Benzene			105.7		%		70-130	08-MAY-19
Ethylbenzene			105.8		%		70-130	08-MAY-19
Methyl t-butyl ether (MTBE)		101.3		%		70-130	08-MAY-19
Styrene			97.4		%		70-130	08-MAY-19
Toluene			107.6		%		70-130	08-MAY-19
meta- & para-Xylene			111.8		%		70-130	08-MAY-19
ortho-Xylene			109.6		%		70-130	08-MAY-19
WG3044486-1 MB	;							
Benzene			<0.00050		mg/L		0.0005	08-MAY-19
Ethylbenzene			<0.00050		mg/L		0.0005	08-MAY-19
Methyl t-butyl ether (MTBE)		<0.00050		mg/L		0.0005	08-MAY-19
Styrene			<0.00050		mg/L		0.0005	08-MAY-19
Toluene			<0.00045		mg/L		0.00045	08-MAY-19
meta- & para-Xylene			<0.00050		mg/L		0.0005	08-MAY-19
ortho-Xylene			<0.00050		mg/L		0.0005	08-MAY-19

Workorder: L2266674 Report Date: 12-JUN-19

GHD Limited Client:

10271 Shellbridge Way

Richmond, BC V6X 2W8

Contact: Airesse MacPhee

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

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
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.

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Workorder: L2266674 Report Date: 12-JUN-19

GHD Limited Client:

> 10271 Shellbridge Way Richmond, BC V6X 2W8

Contact: Airesse MacPhee

Hold Time Exceedances:

Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
30-APR-19 12:00	04-MAY-19 09:00	0.25	93	hours	EHTR-FM
30-APR-19 13:00	04-MAY-19 09:00	0.25	92	hours	EHTR-FM
30-APR-19 14:30	04-MAY-19 09:00	0.25	90	hours	EHTR-FM
30-APR-19 15:45	04-MAY-19 09:00	0.25	89	hours	EHTR-FM
30-APR-19 16:45	04-MAY-19 09:00	0.25	88	hours	EHTR-FM
30-APR-19 15:30	04-MAY-19 09:00	0.25	90	hours	EHTR-FM
30-APR-19 17:40	04-MAY-19 09:00	0.25	87	hours	EHTR-FM
30-APR-19 17:50	04-MAY-19 09:00	0.25	87	hours	EHTR-FM
0 01-MAY-19 10:00	04-MAY-19 09:00	0.25	71	hours	EHTR-FM
1 01-MAY-19 10:40	04-MAY-19 09:00	0.25	70	hours	EHTR-FM
2 01-MAY-19 13:30	04-MAY-19 09:00	0.25	67	hours	EHTR-FM
3	30-APR-19 15:30 30-APR-19 17:40 30-APR-19 17:50 01-MAY-19 10:00 1 01-MAY-19 10:40	30-APR-19 15:30	30-APR-19 15:30	30-APR-19 15:30	30-APR-19 15:30

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry. EHTL:

EHT: Exceeded ALS recommended hold time prior to analysis.

ALS recommended hold time (see units). Rec. HT:

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2266674 were received on 02-MAY-19 11:25.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

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ALS Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2266674-COFC

COC Number: 15 -

Page of

	www.aisgioual.com	_		· · · · · · · · · · · · · · · · · · ·	
Report To	Contact and company name below will appear on the final report	Report Forma.			
Company:	GHD Limited	Select Report Format: 🗵 PDF 🗵 EXCEL 🗵 EDD (DIGITAL)	I	Regular [R] Standard TAT if received by 3 pm - business days - no surcharges	apply
Contact:	Airesse MacPhee	Quality Control (QC) Report with Report	ا ا ا	4 day [P4] 🗆 💆 1 Business day [E1] 🗆]
Phone:		Compare Results to Criteria on Report - provide details below if box checked	GOR!)	3 day [P3]	1
	Company address below will appear on the final report	Select Distribution:	Hang)	2 day [P2]	
Street:	651 Colby Drive	Email 1 or Fax airesse.macphee@ghd.com	Date	and Time Required for all E&P TATs: dd-mmm-yy hh:mm	
City/Province:	Waterloo, ON	Email 2 See PO	For tests tha	it can not be performed according to the service level selected, you will be contacted.	_
ostal Code:	N2V 1C2	Email 3		Analysis Request	
nvoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	. Ir	ndicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: 🖸 EMAIL 🔲 MAIL 🖫 FAX	ρ	THE PLANT	
Company:		Email 1 or Fax		(8)	
Contact:		Email 2	1		<u>v</u>
	Project Information	Oil and Gas Required Fields (client use)]		ji.
ALS Account #	# / Quote #: Q72562	AFE/Cost Center: PO#] [NO3)	ф ··
lob #:	11179286- CVRD	Major/Minor Code: Routing Code:]		Number of Containers
PO / AFE:		Requisitioner:	┇┋	120 Ha 140	JEL (
.SD:	Campbell River (Phase 02) GW and Schedule B	Location:	(specialed)	(W Fg, Prioscherus	Ĕ
A) & L = E 102 -	7	ALS Contact: 15 MAPON Sampler: No Turis] Bec		z
ALS LAD WO	ork Order # (lab use only)	ALS Contact: ASMEEN Sampler: C.F.CK			
ALS Sample #	Sample Identification and/or Coordinates	Date Time Sample Type	A'kalinity Ammonia	Ankons (Conduction)	
(tab use only)	(This description will appear on the report)	(dd mmm yy) (hh:mm)	¥ {	Anib PH TDS Conn MET-TDS	
	WG-56484-300419-NT-01	130-APR-19/12:00 WA	X X		6
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	<u> </u>		 	CAMPLE COMPLIAN AS DECEMED (Ich inco colin)	
Drinking	g Water (DW) Samples ¹ (client use) Special Instructions / S	Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	Frozen	SAMPLE CONDITION AS RECEIVED (lab use only) SIF Observations Yes No	
Are samples tak	ken from a Regulated DW System?		4	s Ice Cubes Custody seal intact Yes No	ä
•	ES DINO	olding times! For NO2/NO3	Cooling I	——————————————————————————————————————	
_	r human drinking water use?			INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATUR	RES °C
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	SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPTION (lab use only)	1	FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Time:	Received by: Date:	Time:	Received by: Date: Tin	ne:
Nituri	11/1/ar May 1,2019 1530			1 1/4 3/2 11	117550
REFER TO BAC	K PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	WHITE - LABORATORY COPY YEL	LOW - CLIE	ENT COPY 000	TOBER 2015 FROM



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2266674-COFC

COC Number: 15

Page 2 of 2

www.alsglobal.com Contact and company name below will appear on the final report Report Format / Dis பார்க்க - Please confirm all E&P TATs with your AM + surcharges will apply Report To Regular [R] **Standard TAT if received by 3 pm - business days - no surcharges apply **GHD** Limited Select Report Format: PDF EXCEL DEDD (DIGITAL) Company: Quality Control (QC) Report with Report 😡 YES 🗀 NO 4 day [P4] 1 Business day [E1] Airesse MacPhee Contact: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] Phone: Same Day, Weekend or Company address below will appear on the final report ☑ EMAIL ☐ MAIL ☐ FAX 2 day [P2] Statutory holiday [E0] Select Distribution: Date and Time Required for all E&P TATs: 651 Colby Drive Email 1 or Fax <u>airesse.macphee@ghd.com</u> dd-mmm-yy hh;mm Street: For tests that can not be performed according to the service level selected, you will be contacted. Waterloo, ON Email 2 See PO City/Province: N2V 1C2 **Analysis Request** Postal Code: Email 3 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ☑ YES □ NO Invoice Distribution Invoice To Same as Report To ☑ YES ☐ NO Select Invoice Distribution: @ EMAIL ☐ MAIL □ FAX Copy of Invoice with Report Email 1 or Fax Company: Hg. Phosphorus, Sulfur, Hardness) Email 2 Contact: Containers Oil and Gas Required Fields (client use) Project Information NO3) PO# ALS Account # / Quote #: Q72562 AFE/Cost Center: 11179286- CVRD Routing Code: .lob# Major/Minor Code: NO2, PO / AFE: Requisitioner: S04, Campbell River (Phase 02) GW 450 Pdule B LSD: Location: ALS Contact: Sampler: ALS Lab Work Order # (lab use only) MET-OIS Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) ÍΛ)/ 0:00 SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples¹ (client use) (electronic COC only) SIF Observations Frozen Are samples taken from a Regulated DW System? Ice Packs ice Cubes Custody seal intact Yes ☐ YES ☐ NO Cooling Initiated INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C Are samples for human drinking water use? ☐ YES ☐ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Time: Received by: Time: Received by: Date: Released by Date: MA YELLOW - CLIENT COPY WHITE - LABORATORY COPY



GHD Limited

ATTN: Airesse MacPhee 10271 Shellbridge Way

Richmond, BC V6X 2W8

Date Received: 02-MAY-19

Report Date: 05-JUN-19 12:52 (MT)

Version: FINAL REV. 2

Client Phone: 604-248-3661

Certificate of Analysis

Lab Work Order #: L2266676

Project P.O. #: NOT SUBMITTED

Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Campbell River (Phase 02) SW

Comments: ADDITIONAL 09-MAY-19 18:18 Sum of NO2+NO3 has been added.

5-JUN-2019 Updated project #s and phase codes as per client request.

Selam Worku Account Manager

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

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700

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L2266676 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-1 WS-56484-010519-CF-01 Sampled By: C.Fick on 01-MAY-19 @ 10:55 Matrix: WS							
Physical Tests							
Conductivity	36.7		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	12.0		0.50	mg/L		03-MAY-19	
pH	7.05		0.10	pН		04-MAY-19	R4622925
Total Dissolved Solids	44		10	mg/L		06-MAY-19	R4625627
Anions and Nutrients				•			
Alkalinity, Bicarbonate (as CaCO3)	11.5		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	11.5		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	0.0447		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	3.42		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate and Nitrite (as N)	0.0308		0.0051	mg/L		09-MAY-19	
Nitrate (as N)	0.0295		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	0.0013		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	0.61		0.30	mg/L		02-MAY-19	R4628697
Total Metals							
Aluminum (Al)-Total	0.0851		0.0030	mg/L		03-MAY-19	R4622214
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Arsenic (As)-Total	0.00018		0.00010	mg/L		03-MAY-19	R4622214
Barium (Ba)-Total	0.00203		0.00010	mg/L		03-MAY-19	R4622214
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Boron (B)-Total	<0.010		0.010	mg/L		03-MAY-19	R4622214
Cadmium (Cd)-Total	0.0000071		0.0000050	mg/L		03-MAY-19	R4622214
Calcium (Ca)-Total	2.81		0.050	mg/L		03-MAY-19	R4622214
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Chromium (Cr)-Total	0.00023		0.00010	mg/L		03-MAY-19	R4622214
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Copper (Cu)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Iron (Fe)-Total	0.237		0.010	mg/L		03-MAY-19	R4622214
Lead (Pb)-Total	0.000142		0.000050	mg/L		03-MAY-19	R4622214
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-MAY-19	R4622214
Magnesium (Mg)-Total	1.20		0.0050	mg/L		03-MAY-19	
Manganese (Mn)-Total	0.0325		0.00010	mg/L		03-MAY-19	R4622214
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		05-MAY-19	R4623075
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Phosphorus (P)-Total	<0.050		0.050	mg/L		03-MAY-19	R4622214
Potassium (K)-Total	0.144		0.050	mg/L			R4622214
Rubidium (Rb)-Total	0.00021		0.00020	mg/L		03-MAY-19	R4622214

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

L2266676 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-1 WS-56484-010519-CF-01 Sampled By: C.Fick on 01-MAY-19 @ 10:55 Matrix: WS							
Total Metals							
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Silicon (Si)-Total	3.17		0.10	mg/L		03-MAY-19	R4622214
Silver (Ag)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Sodium (Na)-Total	2.80		0.050	mg/L		03-MAY-19	R4622214
Strontium (Sr)-Total	0.0118		0.00020	mg/L		03-MAY-19	R4622214
Sulfur (S)-Total	<0.50		0.50	mg/L		03-MAY-19	R4622214
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		03-MAY-19	R4622214
Thallium (TI)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Thorium (Th)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Tin (Sn)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Titanium (Ti)-Total	0.00344		0.00030	mg/L		03-MAY-19	R4622214
Tungsten (W)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Uranium (U)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Vanadium (V)-Total	0.00091		0.00050	mg/L		03-MAY-19	R4622214
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		03-MAY-19	R4622214
Zirconium (Zr)-Total	<0.000060		0.000060	mg/L		03-MAY-19	R4622214
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4623028
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0769		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00188		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	0.0000080		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	2.83		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	0.00033		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	0.202		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	0.000104		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	1.21		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.0310		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-1 WS-56484-010519-CF-01							
Sampled By: C.Fick on 01-MAY-19 @ 10:55							
Matrix: WS							
Dissolved Metals				_			
Potassium (K)-Dissolved	0.145		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00020		0.00020	mg/L	02-MAY-19		R4622214
Selenium (Se)-Dissolved	0.000082		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	3.22		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.86		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0118		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	0.00222		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00077		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	0.000067		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266676-2 WS-56484-010519-CF-02 Sampled By: C.Fick on 01-MAY-19 @ 11:00 Matrix: WS							
Physical Tests							
Conductivity	36.3		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	11.9		0.50	mg/L		03-MAY-19	
рН	6.99		0.10	рН		04-MAY-19	R4622925
Total Dissolved Solids	33		10	mg/L		06-MAY-19	R4625627
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	11.3		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	11.3		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	0.0450		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	3.42		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate and Nitrite (as N)	0.0305		0.0051	mg/L		09-MAY-19	
Nitrate (as N)	0.0291		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	0.0014		0.0010	mg/L			R4628697
Sulfate (SO4)	0.61		0.30	mg/L		02-MAY-19	R4628697
Total Metals							
Aluminum (AI)-Total	0.0882		0.0030	mg/L		03-MAY-19	R4622214
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Arsenic (As)-Total	0.00015		0.00010	mg/L		03-MAY-19	R4622214
				-			

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

L2266676 CONTD.... PAGE 5 of 11

Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-2 WS-56484-010519-CF-02							
Sampled By: C.Fick on 01-MAY-19 @ 11:00 Matrix: WS							
Total Metals							
Barium (Ba)-Total	0.00221		0.00010	mg/L		03-MAY-19	R4622214
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Boron (B)-Total	<0.010		0.010	mg/L		03-MAY-19	R4622214
Cadmium (Cd)-Total	0.0000098		0.0000050	mg/L		03-MAY-19	R4622214
Calcium (Ca)-Total	2.84		0.050	mg/L		03-MAY-19	R4622214
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Chromium (Cr)-Total	0.00024		0.00010	mg/L		03-MAY-19	R4622214
Cobalt (Co)-Total	0.00010		0.00010	mg/L		03-MAY-19	R4622214
Copper (Cu)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Iron (Fe)-Total	0.241		0.010	mg/L		03-MAY-19	R4622214
Lead (Pb)-Total	0.000144		0.000050	mg/L		03-MAY-19	R4622214
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-MAY-19	R4622214
Magnesium (Mg)-Total	1.20		0.0050	mg/L		03-MAY-19	R4622214
Manganese (Mn)-Total	0.0319		0.00010	mg/L		03-MAY-19	R4622214
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		05-MAY-19	R4623075
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Phosphorus (P)-Total	<0.050		0.050	mg/L		03-MAY-19	R4622214
Potassium (K)-Total	0.141		0.050	mg/L		03-MAY-19	R4622214
Rubidium (Rb)-Total	0.00020		0.00020	mg/L		03-MAY-19	R4622214
Selenium (Se)-Total	0.000069		0.000050	mg/L		03-MAY-19	R4622214
Silicon (Si)-Total	3.22		0.10	mg/L		03-MAY-19	R4622214
Silver (Ag)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Sodium (Na)-Total	2.78		0.050	mg/L		03-MAY-19	R4622214
Strontium (Sr)-Total	0.0119		0.00020	mg/L		03-MAY-19	
Sulfur (S)-Total	<0.50		0.50	mg/L		03-MAY-19	R4622214
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		03-MAY-19	R4622214
Thallium (TI)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Thorium (Th)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Tin (Sn)-Total	<0.00010		0.00010	mg/L			
Titanium (Ti)-Total	0.00347		0.00030	mg/L		03-MAY-19	R4622214
Tungsten (W)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Uranium (U)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Vanadium (V)-Total	0.00093		0.00050	mg/L		03-MAY-19	R4622214
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		03-MAY-19	R4622214
Zirconium (Zr)-Total	<0.000060		0.000060	mg/L		03-MAY-19	R4622214
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4623028
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (Al)-Dissolved	0.0772		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
1							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-2 WS-56484-010519-CF-02							
Sampled By: C.Fick on 01-MAY-19 @ 11:00 WS							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00193		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cadmium (Cd)-Dissolved	0.0000052		0.0000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Calcium (Ca)-Dissolved	2.77		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Copper (Cu)-Dissolved	0.00040		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Iron (Fe)-Dissolved	0.205		0.010	mg/L	02-MAY-19	03-MAY-19	R4622214
Lead (Pb)-Dissolved	0.000102		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Magnesium (Mg)-Dissolved	1.21		0.0050	mg/L	02-MAY-19	03-MAY-19	R4622214
Manganese (Mn)-Dissolved	0.0311		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19	06-MAY-19	R4625253
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Potassium (K)-Dissolved	0.141		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	0.00021		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silicon (Si)-Dissolved	3.18		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.85		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.0116		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	0.00237		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	0.00080		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	0.000064		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
L2266676-3 WS-56484-010519-CF-03 Sampled By: C.Fick on 01-MAY-19 @ 10:30 WS							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-3 WS-56484-010519-CF-03 Sampled By: C.Fick on 01-MAY-19 @ 10:30 WS							
Physical Tests							
Conductivity	27.9		2.0	uS/cm		04-MAY-19	R4622925
Hardness (as CaCO3)	7.75		0.50	mg/L		03-MAY-19	
pH	7.00		0.10	pН		04-MAY-19	R4622925
Total Dissolved Solids	31		10	mg/L		06-MAY-19	R4625627
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	6.6		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-MAY-19	R4622925
Alkalinity, Total (as CaCO3)	6.6		1.0	mg/L		04-MAY-19	R4622925
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	3.27		0.50	mg/L		02-MAY-19	R4628697
Fluoride (F)	<0.020		0.020	mg/L		02-MAY-19	R4628697
Nitrate and Nitrite (as N)	0.0108		0.0051	mg/L		09-MAY-19	
Nitrate (as N)	0.0108		0.0050	mg/L		02-MAY-19	R4628697
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-19	R4628697
Sulfate (SO4)	0.90		0.30	mg/L		02-MAY-19	R4628697
Total Metals							
Aluminum (AI)-Total	0.0455		0.0030	mg/L		03-MAY-19	R4622214
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Arsenic (As)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Barium (Ba)-Total	0.00135		0.00010	mg/L		03-MAY-19	R4622214
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Boron (B)-Total	<0.010		0.010	mg/L		03-MAY-19	R4622214
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-MAY-19	R4622214
Calcium (Ca)-Total	1.80		0.050	mg/L		03-MAY-19	R4622214
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Chromium (Cr)-Total	0.00016		0.00010	mg/L		03-MAY-19	R4622214
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Copper (Cu)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Iron (Fe)-Total	0.059		0.010	mg/L		03-MAY-19	R4622214
Lead (Pb)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-MAY-19	R4622214
Magnesium (Mg)-Total	0.802		0.0050	mg/L		03-MAY-19	R4622214
Manganese (Mn)-Total	0.00436		0.00010	mg/L		03-MAY-19	R4622214
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		05-MAY-19	R4623075
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		03-MAY-19	R4622214
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Phosphorus (P)-Total	<0.050		0.050	mg/L		03-MAY-19	R4622214
Potassium (K)-Total	0.154		0.050	mg/L			R4622214
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L		03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-3 WS-56484-010519-CF-03							
Sampled By: C.Fick on 01-MAY-19 @ 10:30 Matrix: WS							
Total Metals							
Selenium (Se)-Total	<0.00050		0.000050	mg/L		03-MAY-19	R4622214
Silicon (Si)-Total	2.55		0.10	mg/L		03-MAY-19	R4622214
Silver (Ag)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Sodium (Na)-Total	2.52		0.050	mg/L		03-MAY-19	R4622214
Strontium (Sr)-Total	0.00811		0.00020	mg/L		03-MAY-19	R4622214
Sulfur (S)-Total	<0.50		0.50	mg/L		03-MAY-19	R4622214
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		03-MAY-19	R4622214
Thallium (TI)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Thorium (Th)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Tin (Sn)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Titanium (Ti)-Total	0.00058		0.00030	mg/L		03-MAY-19	R4622214
Tungsten (W)-Total	<0.00010		0.00010	mg/L		03-MAY-19	R4622214
Uranium (U)-Total	<0.000010		0.000010	mg/L		03-MAY-19	R4622214
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-MAY-19	R4622214
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		03-MAY-19	R4622214
Zirconium (Zr)-Total	<0.000060		0.000060	mg/L		03-MAY-19	R4622214
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-MAY-19	R4623028
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4621834
Aluminum (AI)-Dissolved	0.0409		0.0010	mg/L	02-MAY-19	03-MAY-19	-
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Barium (Ba)-Dissolved	0.00129		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19		R4622214
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-MAY-19		R4622214
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-MAY-19		R4622214
Calcium (Ca)-Dissolved	1.78		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	02-MAY-19		R4622214
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19		R4622214
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	02-MAY-19		R4622214
Iron (Fe)-Dissolved	0.048		0.010	mg/L	02-MAY-19		R4622214
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19		R4622214
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19		R4622214
Magnesium (Mg)-Dissolved	0.803		0.0050	mg/L	02-MAY-19		R4622214
Manganese (Mn)-Dissolved	0.00358		0.00010	mg/L	02-MAY-19		R4622214
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	05-MAY-19		R4625253
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19		R4622214
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19		R4622214
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2266676-3 WS-56484-010519-CF-03 Sampled By: C.Fick on 01-MAY-19 @ 10:30 Matrix: WS							
Dissolved Metals							
Potassium (K)-Dissolved	0.136		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	03-MAY-19	
Silicon (Si)-Dissolved	2.49		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Sodium (Na)-Dissolved	2.59		0.050	mg/L	02-MAY-19	03-MAY-19	R4622214
Strontium (Sr)-Dissolved	0.00806		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	02-MAY-19	03-MAY-19	R4622214
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-MAY-19	03-MAY-19	R4622214
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Titanium (Ti)-Dissolved	0.00040		0.00030	mg/L	02-MAY-19	03-MAY-19	R4622214
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	03-MAY-19	R4622214
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	03-MAY-19	R4622214
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	03-MAY-19	R4622214
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	03-MAY-19	R4622214
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	02-MAY-19	03-MAY-19	R4622214
* Refer to Referenced Information for Qualifiers (if any) and	Mothodology					<u> </u>	

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2266676-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2266676-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2266676-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2266676-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2266676-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L2266676-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L2266676-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier Description

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-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbon Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where negative during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

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

Water samples undergo a cold-oxidation using 56 mine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), presemed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC EPA 200.2/6020A (mod)

Water samples are digested with nitric and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

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PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires interpreted 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.

** 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

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2266676 Report Date: 05-JUN-19 Page 1 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA Batch R46229	Water 925							
WG3040534-3 CR Alkalinity, Total (as 0		VA-ALK-TITR-	CONTROL 99.8		%		85-115	04-MAY-19
WG3040534-5 DU Alkalinity, Total (as C		L2266674-1 33.6	34.2		mg/L	1.8	20	04-MAY-19
WG3040534-1 ME Alkalinity, Total (as 0			<1.0		mg/L		1	04-MAY-19
CL-IC-N-VA	Water							
Batch R46286								
WG3040533-3 DU Chloride (Cl)		L2266674-1 2.19	2.17		mg/L	0.9	20	02-MAY-19
WG3040533-2 LC Chloride (CI)			100.7		%		90-110	02-MAY-19
WG3040533-1 ME Chloride (CI)			<0.50		mg/L		0.5	02-MAY-19
WG3040533-4 MS Chloride (CI)	;	L2266674-2	100.7		%		75-125	02-MAY-19
EC-PCT-VA	Water							
Batch R46229								
WG3040534-4 CR Conductivity	М	VA-EC-PCT-C	ONTROL 99.8		%		90-110	04-MAY-19
WG3040534-5 DU Conductivity	Р	L2266674-1 75.9	76.9		uS/cm	1.3	10	04-MAY-19
WG3040534-1 ME Conductivity	3		<2.0		uS/cm		2	04-MAY-19
F-IC-N-VA	Water							
Batch R46286	-							
WG3040533-3 DU Fluoride (F)	Р	L2266674-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	02-MAY-19
WG3040533-2 LC Fluoride (F)	S		101.5		%		90-110	02-MAY-19
WG3040533-1 ME Fluoride (F)	3		<0.020		mg/L		0.02	02-MAY-19
WG3040533-4 MS Fluoride (F)	3	L2266674-2	102.0		%		75-125	02-MAY-19
HG-D-CVAA-VA	Water							



Workorder: L2266676 Report Date: 05-JUN-19 Page 2 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4625253								
WG3042035-2 LCS Mercury (Hg)-Dissolved			96.3		%		80-120	06-MAY-19
WG3042035-1 MB Mercury (Hg)-Dissolved			<0.0000050	<u> </u>	mg/L		0.000005	06-MAY-19
HG-T-CVAA-VA	Water							
Batch R4623075 WG3042057-3 DUP Mercury (Hg)-Total		L2266135-1 0.0000071	0.0000066		mg/L	6.3	20	05-MAY-19
WG3042057-5 DUP Mercury (Hg)-Total		L2266198-4 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-MAY-19
WG3042057-7 DUP Mercury (Hg)-Total		L2266695-2 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-MAY-19
WG3042057-9 DUP Mercury (Hg)-Total		L2264733-5 0.0000072	0.0000076		mg/L	5.7	20	05-MAY-19
WG3042057-2 LCS Mercury (Hg)-Total			96.9		%		80-120	05-MAY-19
WG3042057-1 MB Mercury (Hg)-Total			<0.0000050	2	mg/L		0.000005	05-MAY-19
WG3042057-10 MS Mercury (Hg)-Total		L2264733-6	97.1		%		70-130	05-MAY-19
WG3042057-4 MS Mercury (Hg)-Total		L2266135-2	98.2		%		70-130	05-MAY-19
WG3042057-6 MS Mercury (Hg)-Total		L2266198-5	97.9		%		70-130	05-MAY-19
WG3042057-8 MS Mercury (Hg)-Total		L2266695-6	97.0		%		70-130	05-MAY-19
MET-D-CCMS-VA	Water							
Batch R4622214								
WG3040605-3 DUP Aluminum (Al)-Dissolved	i	L2266674-1 0.0032	0.0025	J	mg/L	0.0007	0.002	03-MAY-19
Antimony (Sb)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Barium (Ba)-Dissolved		0.00200	0.00206		mg/L	2.6	20	03-MAY-19
Beryllium (Be)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAY-19
Cadmium (Cd)-Dissolved	d	<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-MAY-19



Workorder: L2266676 Report Date: 05-JUN-19 Page 3 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R462	2214							
WG3040605-3 Calcium (Ca)-Diss	DUP	L2266674-1 11.0	11.2		mg/L	4.5	20	00 MAN/ 40
Cesium (Cs)-Diss		<0.00010	<0.000010	RPD-NA	mg/L	1.5	20	03-MAY-19
Chromium (Cr)-Dis		0.00016	0.00016	RPD-NA	mg/L	N/A 1.5	20 20	03-MAY-19 03-MAY-19
Cobalt (Co)-Disso		<0.00010	<0.00010	RPD-NA	mg/L			03-MAY-19
Copper (Cu)-Disso		<0.00010	<0.00010	RPD-NA RPD-NA	mg/L	N/A N/A	20 20	
Iron (Fe)-Dissolve		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAY-19
Lead (Pb)-Dissolve		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAY-19
Lithium (Li)-Dissol		<0.000030	<0.0010		mg/L			03-MAY-19
Magnesium (Mg)-l		1.63	1.62	RPD-NA	mg/L	N/A	20	03-MAY-19
Manganese (Mn)-		0.00014	0.00015		mg/L	0.4	20	03-MAY-19
Molybdenum (Mo)		0.00014	0.00013		mg/L	3.9	20	03-MAY-19
Nickel (Ni)-Dissolv		<0.000125	<0.000129	DDD NA		3.0	20	03-MAY-19
Phosphorus (P)-D		<0.000	<0.050	RPD-NA	mg/L	N/A	20	03-MAY-19
Potassium (K)-Dis		0.156	0.156	RPD-NA	mg/L mg/L	N/A	20	03-MAY-19
Rubidium (Rb)-Dis				DDD MA	•	0.2	20	03-MAY-19
Selenium (Se)-Dis		<0.00020 0.000079	<0.00020 0.000067	RPD-NA	mg/L mg/L	N/A	20	03-MAY-19
Silicon (Si)-Dissolv		3.62	3.55			17	20	03-MAY-19
Silver (Ag)-Dissolv				DDD MA	mg/L	1.8	20	03-MAY-19
		<0.000010	<0.000010 1.04	RPD-NA	mg/L	N/A	20	03-MAY-19
Sodium (Na)-Diss		1.06			mg/L	1.9	20	03-MAY-19
Strontium (Sr)-Dis		0.0159	0.0159		mg/L	0.2	20	03-MAY-19
Sulfur (S)-Dissolve		0.91	0.84		mg/L	7.7	20	03-MAY-19
Tellurium (Te)-Dis		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-MAY-19
Thallium (TI)-Disse		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Thorium (Th)-Diss		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Titanium (Ti)-Diss		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	03-MAY-19
Tungsten (W)-Dis		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Uranium (U)-Disso		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Vanadium (V)-Dis		0.00125	0.00124		mg/L	0.1	20	03-MAY-19
Zinc (Zn)-Dissolve		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAY-19
Zirconium (Zr)-Dis		<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	03-MAY-19
WG3040605-2 L Aluminum (Al)-Dis			104.0		%		80-120	03-MAY-19



Workorder: L2266676 Report Date: 05-JUN-19 Page 4 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R462	2214							
	cs				0.4			
Antimony (Sb)-Dis			99.7		%		80-120	03-MAY-19
Arsenic (As)-Disso			98.5		%		80-120	03-MAY-19
Barium (Ba)-Disso			102.2		%		80-120	03-MAY-19
Beryllium (Be)-Dis			99.2		%		80-120	03-MAY-19
Bismuth (Bi)-Disso			102.5		%		80-120	03-MAY-19
Boron (B)-Dissolve			96.0		%		80-120	03-MAY-19
Cadmium (Cd)-Dis			101.1		%		80-120	03-MAY-19
Calcium (Ca)-Diss			100.5		%		80-120	03-MAY-19
Cesium (Cs)-Disso	olved		101.0		%		80-120	03-MAY-19
Chromium (Cr)-Dis	ssolved		101.2		%		80-120	03-MAY-19
Cobalt (Co)-Dissol	lved		99.1		%		80-120	03-MAY-19
Copper (Cu)-Disso	olved		101.0		%		80-120	03-MAY-19
Iron (Fe)-Dissolve	d		96.0		%		80-120	03-MAY-19
Lead (Pb)-Dissolve	ed		99.6		%		80-120	03-MAY-19
Lithium (Li)-Dissol	ved		95.9		%		80-120	03-MAY-19
Magnesium (Mg)-I	Dissolved		105.5		%		80-120	03-MAY-19
Manganese (Mn)-I	Dissolved		101.7		%		80-120	03-MAY-19
Molybdenum (Mo)	-Dissolved		97.6		%		80-120	03-MAY-19
Nickel (Ni)-Dissolv	red .		100.8		%		80-120	03-MAY-19
Phosphorus (P)-Di	issolved		103.5		%		70-130	03-MAY-19
Potassium (K)-Dis	solved		100.7		%		80-120	03-MAY-19
Rubidium (Rb)-Dis	ssolved		101.4		%		80-120	03-MAY-19
Selenium (Se)-Dis	solved		99.2		%		80-120	03-MAY-19
Silicon (Si)-Dissolv	/ed		94.6		%		60-140	03-MAY-19
Silver (Ag)-Dissolv	red		97.1		%		80-120	03-MAY-19
Sodium (Na)-Disso	olved		107.7		%		80-120	03-MAY-19
Strontium (Sr)-Dis	solved		99.3		%		80-120	03-MAY-19
Sulfur (S)-Dissolve	ed		103.1		%		80-120	03-MAY-19
Tellurium (Te)-Dis	solved		95.8		%		80-120	03-MAY-19
Thallium (TI)-Disso	olved		99.4		%		80-120	03-MAY-19
Thorium (Th)-Diss	olved		98.4		%		80-120	03-MAY-19
Tin (Sn)-Dissolved			96.7		%		80-120	03-MAY-19
Titanium (Ti)-Disso			94.2		%		80-120	03-MAY-19
` '								· · · · · · · · · · · · · · · · · · ·



Workorder: L2266676 Report Date: 05-JUN-19 Page 5 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

MET-D-CCMS-VA Water Batch R4622214 WG3040605-2 LCS Tungsten (W)-Dissolved 98.1 % 80-120 03-MAY-19 Uranium (U)-Dissolved 101.6 % 80-120 03-MAY-19 Vanadium (V)-Dissolved 101.7 % 80-120 03-MAY-19 Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010 mg/L 0.001 03-MAY-19 Antimony (Sb)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19 Arsenic (As)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19 Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19	Matrix	RPD Limit Analyz	ed
WG3040605-2 LCS Tungsten (W)-Dissolved 98.1 % 80-120 03-MAY-19 Uranium (U)-Dissolved 101.6 % 80-120 03-MAY-19 Vanadium (V)-Dissolved 101.7 % 80-120 03-MAY-19 Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010 mg/L 0.001 03-MAY-19 Antimony (Sb)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19 Arsenic (As)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19 Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19	S-VA Water		
Tungsten (W)-Dissolved 98.1 % 80-120 03-MAY-19 Uranium (U)-Dissolved 101.6 % 80-120 03-MAY-19 Vanadium (V)-Dissolved 101.7 % 80-120 03-MAY-19 Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB MB NB </td <td>R4622214</td> <td></td> <td></td>	R4622214		
Uranium (U)-Dissolved 101.6 % 80-120 03-MAY-19 Vanadium (V)-Dissolved 101.7 % 80-120 03-MAY-19 Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB MB Ng/L 0.001 03-MAY-19 Antimony (Sb)-Dissolved <0.00010			
Vanadium (V)-Dissolved 101.7 % 80-120 03-MAY-19 Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010			-
Zinc (Zn)-Dissolved 101.0 % 80-120 03-MAY-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010			
Zirconium (Zr)-Dissolved 94.6 % 80-120 03-MAY-19 WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010	• •		
WG3040605-1 MB Aluminum (Al)-Dissolved <0.0010			Y-19
Aluminum (Al)-Dissolved <0.0010		80-120 03-MA	Y-19
Antimony (Sb)-Dissolved <0.00010		0.001 03-MA	Y-19
Arsenic (As)-Dissolved <0.00010			
Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19		00 1111	
	,	00 1111	
Beryllium (Be)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19			-
Bismuth (Bi)-Dissolved <0.000050 mg/L 0.00005 03-MAY-19	,		-
Boron (B)-Dissolved <0.010 mg/L 0.01 03-MAY-19			-
Cadmium (Cd)-Dissolved <0.000005C mg/L 0.000005 03-MAY-19			
Calcium (Ca)-Dissolved <0.050 mg/L 0.05 03-MAY-19	(Ca)-Dissolved		
Cesium (Cs)-Dissolved <0.000010 mg/L 0.00001 03-MAY-19			
Chromium (Cr)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19			
Cobalt (Co)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19	Co)-Dissolved	0.0001 03-MA	Y-19
Copper (Cu)-Dissolved <0.00020 mg/L 0.0002 03-MAY-19	Cu)-Dissolved	0.0002 03-MA	Y-19
Iron (Fe)-Dissolved <0.010 mg/L 0.01 03-MAY-19	-Dissolved	0.01 03-MA	Y-19
Lead (Pb)-Dissolved <0.000050 mg/L 0.00005 03-MAY-19)-Dissolved	0.00005 03-MA	Y-19
Lithium (Li)-Dissolved <0.0010 mg/L 0.001 03-MAY-19	Li)-Dissolved	0.001 03-MA	Y-19
Magnesium (Mg)-Dissolved <0.0050 mg/L 0.005 03-MAY-19	um (Mg)-Dissolved	0.005 03-MA	Y-19
Manganese (Mn)-Dissolved <0.00010 mg/L 0.0001 03-MAY-19	ese (Mn)-Dissolved	0.0001 03-MA	Y-19
Molybdenum (Mo)-Dissolved <0.000050 mg/L 0.00005 03-MAY-19	num (Mo)-Dissolved	0.00005 03-MA	Y-19
Nickel (Ni)-Dissolved <0.00050 mg/L 0.0005 03-MAY-19	i)-Dissolved	0.0005 03-MA	Y-19
Phosphorus (P)-Dissolved <0.050 mg/L 0.05 03-MAY-19	rus (P)-Dissolved	0.05 03-MA	Y-19
Potassium (K)-Dissolved <0.050 mg/L 0.05 03-MAY-19	m (K)-Dissolved	0.05 03-MA	Y-19
Rubidium (Rb)-Dissolved <0.00020 mg/L 0.0002 03-MAY-19	(Rb)-Dissolved	0.0002 03-MA	Y-19
Selenium (Se)-Dissolved <0.000050 mg/L 0.00005 03-MAY-19	(Se)-Dissolved	0.00005 03-MA	Y-19
Silicon (Si)-Dissolved <0.050 mg/L 0.05 03-MAY-19	Si)-Dissolved	0.05 03-MA	Y-19
Silver (Ag)-Dissolved <0.000010 mg/L 0.00001 03-MAY-19	g)-Dissolved	0.00001 03-MA	Y-19
Sodium (Na)-Dissolved <0.050 mg/L 0.05 03-MAY-19	Na)-Dissolved	0.05 03-MA	Y-19
Strontium (Sr)-Dissolved <0.00020 mg/L 0.0002 03-MAY-19	n (Sr)-Dissolved	0.0002 03-MA	Y-19



Workorder: L2266676 Report Date: 05-JUN-19 Page 6 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4622214								
WG3040605-1 MB			-0.50		ma/l		0.5	00.144.7/ 15
Sulfur (S)-Dissolved	d		<0.50 <0.00020		mg/L		0.5 0.0002	03-MAY-19
Tellurium (Te)-Dissolve				n	mg/L			03-MAY-19
Thallium (TI)-Dissolved			<0.00001	U	mg/L		0.00001 0.0001	03-MAY-19
Thorium (Th)-Dissolved					mg/L		0.0001	03-MAY-19
Tin (Sn)-Dissolved Titanium (Ti)-Dissolved			<0.00010		mg/L		0.0001	03-MAY-19
` ,			<0.00030		mg/L			03-MAY-19
Tungsten (W)-Dissolve	u		<0.00010	0	mg/L		0.0001	03-MAY-19
Uranium (U)-Dissolved	d		<0.00001	U	mg/L		0.00001	03-MAY-19
Vanadium (V)-Dissolved	u		<0.00050		mg/L		0.0005	03-MAY-19
Zinc (Zn)-Dissolved	ام.		<0.0010	0	mg/L		0.001	03-MAY-19
Zirconium (Zr)-Dissolve	·u	1,000,071,0	<0.00006	U	mg/L		0.00006	03-MAY-19
WG3040605-4 MS Aluminum (Al)-Dissolve	ed	L2266674-2	100.3		%		70-130	03-MAY-19
Antimony (Sb)-Dissolve			102.3		%		70-130	03-MAY-19
Arsenic (As)-Dissolved			109.5		%		70-130	03-MAY-19
Barium (Ba)-Dissolved			107.0		%		70-130	03-MAY-19
Beryllium (Be)-Dissolve	d		101.7		%		70-130	03-MAY-19
Bismuth (Bi)-Dissolved			98.6		%		70-130	03-MAY-19
Boron (B)-Dissolved			98.8		%		70-130	03-MAY-19
Cadmium (Cd)-Dissolve	ed		104.1		%		70-130	03-MAY-19
Calcium (Ca)-Dissolved	i		N/A	MS-B	%		-	03-MAY-19
Cesium (Cs)-Dissolved			106.6		%		70-130	03-MAY-19
Chromium (Cr)-Dissolv	ed		99.8		%		70-130	03-MAY-19
Cobalt (Co)-Dissolved			98.1		%		70-130	03-MAY-19
Copper (Cu)-Dissolved			99.9		%		70-130	03-MAY-19
Iron (Fe)-Dissolved			97.7		%		70-130	03-MAY-19
Lead (Pb)-Dissolved			101.2		%		70-130	03-MAY-19
Lithium (Li)-Dissolved			94.3		%		70-130	03-MAY-19
Magnesium (Mg)-Disso	lved		N/A	MS-B	%		-	03-MAY-19
Manganese (Mn)-Disso	lved		99.99		%		70-130	03-MAY-19
Molybdenum (Mo)-Diss	olved		99.5		%		70-130	03-MAY-19
Nickel (Ni)-Dissolved			100.4		%		70-130	03-MAY-19
Phosphorus (P)-Dissolv	ved .		106.9		%		70-130	03-MAY-19
Potassium (K)-Dissolve	ed		98.5		%		70-130	03-MAY-19



Workorder: L2266676 Report Date: 05-JUN-19 Page 7 of 15

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4622214								
WG3040605-4 MS		L2266674-2						
Rubidium (Rb)-Dissolved			104.8		%		70-130	03-MAY-19
Selenium (Se)-Dissolved	i		112.0		%		70-130	03-MAY-19
Silicon (Si)-Dissolved			89.6		%		70-130	03-MAY-19
Silver (Ag)-Dissolved			102.5		%		70-130	03-MAY-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-MAY-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-MAY-19
Sulfur (S)-Dissolved			104.2		%		70-130	03-MAY-19
Tellurium (Te)-Dissolved	I		111.1		%		70-130	03-MAY-19
Thallium (TI)-Dissolved			101.9		%		70-130	03-MAY-19
Thorium (Th)-Dissolved			103.4		%		70-130	03-MAY-19
Tin (Sn)-Dissolved			100.3		%		70-130	03-MAY-19
Titanium (Ti)-Dissolved			98.5		%		70-130	03-MAY-19
Tungsten (W)-Dissolved			102.1		%		70-130	03-MAY-19
Uranium (U)-Dissolved			103.4		%		70-130	03-MAY-19
Vanadium (V)-Dissolved			103.1		%		70-130	03-MAY-19
Zinc (Zn)-Dissolved			103.8		%		70-130	03-MAY-19
Zirconium (Zr)-Dissolved	I		96.6		%		70-130	03-MAY-19
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-3 DUP		L2266676-2 0.0882	0.0912		/I	0.0	00	00 MAN/ 40
Aluminum (Al)-Total					mg/L	3.3	20	03-MAY-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Arsenic (As)-Total		0.00015	0.00016		mg/L	6.6	20	03-MAY-19
Barium (Ba)-Total		0.00221	0.00222		mg/L	0.1	20	03-MAY-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAY-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAY-19
Cadmium (Cd)-Total		0.0000098	0.0000114		mg/L	15	20	03-MAY-19
Calcium (Ca)-Total		2.84	2.79		mg/L	1.7	20	03-MAY-19
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Chromium (Cr)-Total		0.00024	0.00024		mg/L	2.7	20	03-MAY-19
Onioniani (Or)-Totai								
Cobalt (Co)-Total		0.00010	0.00011		mg/L	1.8	20	03-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-3 DUP		L2266676-2	0.040		/I			
Iron (Fe)-Total		0.241	0.240		mg/L	0.6	20	03-MAY-19
Lead (Pb)-Total		0.000144	0.000141		mg/L	1.5	20	03-MAY-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAY-19
Magnesium (Mg)-Total		1.20	1.19		mg/L	0.1	20	03-MAY-19
Manganese (Mn)-Total		0.0319	0.0322		mg/L	1.0	20	03-MAY-19
Molybdenum (Mo)-Total		<0.000050	<0.000050		mg/L	N/A	20	03-MAY-19
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAY-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-MAY-19
Potassium (K)-Total		0.141	0.140		mg/L	0.0	20	03-MAY-19
Rubidium (Rb)-Total		0.00020	0.00021		mg/L	5.4	20	03-MAY-19
Selenium (Se)-Total		0.000069	0.000074		mg/L	7.8	20	03-MAY-19
Silicon (Si)-Total		3.22	3.22		mg/L	0.1	20	03-MAY-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Sodium (Na)-Total		2.78	2.81		mg/L	1.0	20	03-MAY-19
Strontium (Sr)-Total		0.0119	0.0119		mg/L	0.0	20	03-MAY-19
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-MAY-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-MAY-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Titanium (Ti)-Total		0.00347	0.00331		mg/L	4.6	20	03-MAY-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAY-19
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAY-19
Vanadium (V)-Total		0.00093	0.00091		mg/L	1.8	20	03-MAY-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	03-MAY-19
Zirconium (Zr)-Total		<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	03-MAY-19
WG3040597-2 LCS								
Aluminum (AI)-Total			105.5		%		80-120	03-MAY-19
Antimony (Sb)-Total			101.6		%		80-120	03-MAY-19
Arsenic (As)-Total			102.3		%		80-120	03-MAY-19
Barium (Ba)-Total			104.0		%		80-120	03-MAY-19
Beryllium (Be)-Total			100.6		%		80-120	03-MAY-19
Bismuth (Bi)-Total			101.2		%		80-120	03-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-2 LCS Boron (B)-Total			94.2		%		00.400	00 MAN/ 40
			94.2 102.2		%		80-120	03-MAY-19
Cadmium (Cd)-Total Calcium (Ca)-Total			102.2		%		80-120	03-MAY-19
Cesium (Cs)-Total			101.1		%		80-120	03-MAY-19
Chromium (Cr)-Total					%		80-120	03-MAY-19
, ,			102.6		%		80-120	03-MAY-19
Copper (Cu) Total			100.4 101.6		%		80-120	03-MAY-19
Copper (Cu)-Total			97.7				80-120	03-MAY-19
Iron (Fe)-Total Lead (Pb)-Total			100.7		%		80-120	03-MAY-19
			96.4		%		80-120	03-MAY-19
Lithium (Li)-Total Magnesium (Mg)-Total			105.7		%		80-120	03-MAY-19
Manganese (Mn)-Total			103.7		%		80-120	03-MAY-19
Molybdenum (Mo)-Total			99.4		%		80-120	03-MAY-19
			103.7		%		80-120	03-MAY-19
Nickel (Ni)-Total			103.7		%		80-120	03-MAY-19
Phosphorus (P)-Total Potassium (K)-Total			100.2		%		80-120	03-MAY-19
			98.6		%		80-120	03-MAY-19
Rubidium (Rb)-Total Selenium (Se)-Total			98.6		%		80-120	03-MAY-19
							80-120	03-MAY-19
Silicon (Si)-Total			100.2 97.6		%		80-120	03-MAY-19
Silver (Ag)-Total Sodium (Na)-Total			107.7		%		80-120	03-MAY-19
Strontium (Sr)-Total			107.7		%		80-120	03-MAY-19
Sulfur (S)-Total			102.5		%		80-120	03-MAY-19
Tellurium (Te)-Total			102.5		%		80-120	03-MAY-19
Thallium (TI)-Total			100.7		%		80-120	03-MAY-19
Thorium (Th)-Total			100.7		%		80-120	03-MAY-19
Tin (Sn)-Total			98.4		%		80-120	03-MAY-19
Titanium (Ti)-Total			96.4		%		80-120	03-MAY-19
Tungsten (W)-Total			97.1		%		80-120	03-MAY-19
Uranium (U)-Total			99. <i>7</i> 101.1		%		80-120	03-MAY-19
Vanadium (V)-Total			101.1		%		80-120	03-MAY-19
					%		80-120	03-MAY-19
Zinc (Zn)-Total Zirconium (Zr)-Total			105.4		%		80-120	03-MAY-19
			95.3		/0		80-120	03-MAY-19
WG3040597-1 MB								



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-1 MB			0.0000		s./I		0.000	
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	03-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	03-MAY-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	03-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-MAY-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	03-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-MAY-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	03-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-MAY-19
Magnesium (Mg)-Total			< 0.0050		mg/L		0.005	03-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	03-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-MAY-19
Phosphorus (P)-Total			< 0.050		mg/L		0.05	03-MAY-19
Potassium (K)-Total			< 0.050		mg/L		0.05	03-MAY-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-MAY-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	03-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-MAY-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	03-MAY-19
Sodium (Na)-Total			< 0.050		mg/L		0.05	03-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-MAY-19
Sulfur (S)-Total			<0.50		mg/L		0.5	03-MAY-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-MAY-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	03-MAY-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-MAY-19
Till (Oll) Total			~0.00010		111g/ L		0.0001	03-IVIA I - 19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-1 MB Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02 MAY 40
Tungsten (W)-Total			<0.00030		mg/L		0.0003	03-MAY-19 03-MAY-19
Uranium (U)-Total			<0.00010)	mg/L		0.0001	03-MAY-19
Vanadium (V)-Total			<0.00050	,	mg/L		0.0005	03-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-MAY-19
Zirconium (Zr)-Total			<0.0000)	mg/L		0.00006	03-MAY-19
WG3040597-4 MS		L2266676-1	40.00000	,	g/ _		0.00000	03-IVIA 1-19
Aluminum (AI)-Total		L2200070-1	103.3		%		70-130	03-MAY-19
Antimony (Sb)-Total			96.3		%		70-130	03-MAY-19
Arsenic (As)-Total			104.8		%		70-130	03-MAY-19
Barium (Ba)-Total			101.7		%		70-130	03-MAY-19
Beryllium (Be)-Total			96.8		%		70-130	03-MAY-19
Bismuth (Bi)-Total			104.6		%		70-130	03-MAY-19
Boron (B)-Total			94.2		%		70-130	03-MAY-19
Cadmium (Cd)-Total			110.8		%		70-130	03-MAY-19
Calcium (Ca)-Total			94.2		%		70-130	03-MAY-19
Cesium (Cs)-Total			105.1		%		70-130	03-MAY-19
Chromium (Cr)-Total			103.3		%		70-130	03-MAY-19
Cobalt (Co)-Total			103.2		%		70-130	03-MAY-19
Copper (Cu)-Total			104.6		%		70-130	03-MAY-19
Iron (Fe)-Total			102.0		%		70-130	03-MAY-19
Lead (Pb)-Total			102.9		%		70-130	03-MAY-19
Lithium (Li)-Total			93.9		%		70-130	03-MAY-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	03-MAY-19
Manganese (Mn)-Total			N/A	MS-B	%		-	03-MAY-19
Molybdenum (Mo)-Total			96.9		%		70-130	03-MAY-19
Nickel (Ni)-Total			105.2		%		70-130	03-MAY-19
Phosphorus (P)-Total			97.4		%		70-130	03-MAY-19
Potassium (K)-Total			99.3		%		70-130	03-MAY-19
Rubidium (Rb)-Total			104.5		%		70-130	03-MAY-19
Selenium (Se)-Total			102.2		%		70-130	03-MAY-19
Silicon (Si)-Total			94.7		%		70-130	03-MAY-19
Silver (Ag)-Total			101.1		%		70-130	03-MAY-19
Sodium (Na)-Total			N/A	MS-B	%		-	03-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4622214								
WG3040597-4 MS		L2266676-1	07.5		0/			
Strontium (Sr)-Total			97.5		%		70-130	03-MAY-19
Sulfur (S)-Total			103.1		%		70-130	03-MAY-19
Tellurium (Te)-Total			100.1		%		70-130	03-MAY-19
Thallium (TI)-Total			102.6		%		70-130	03-MAY-19
Thorium (Th)-Total			106.5		%		70-130	03-MAY-19
Tin (Sn)-Total			97.7		%		70-130	03-MAY-19
Titanium (Ti)-Total			95.9		%		70-130	03-MAY-19
Tungsten (W)-Total			99.7		%		70-130	03-MAY-19
Uranium (U)-Total			103.9		%		70-130	03-MAY-19
Vanadium (V)-Total			103.7		%		70-130	03-MAY-19
Zinc (Zn)-Total			104.7		%		70-130	03-MAY-19
Zirconium (Zr)-Total			97.7		%		70-130	03-MAY-19
NH3-F-VA	Water							
Batch R4626606								
WG3043454-3 DUP Ammonia, Total (as N)		L2266676-1 0.0447	0.0448		mg/L	0.1	20	07-MAY-19
WG3043454-2 LCS Ammonia, Total (as N)			91.1		%		85-115	07-MAY-19
WG3043454-1 MB			0.0050		e./I		0.005	
Ammonia, Total (as N)			<0.0050		mg/L		0.005	07-MAY-19
WG3043454-4 MS Ammonia, Total (as N)		L2266676-2	89.7		%		75-125	07-MAY-19
NO2-L-IC-N-VA	Water							
Batch R4628697								
WG3040533-3 DUP Nitrite (as N)		L2266674-1 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-MAY-19
WG3040533-2 LCS Nitrite (as N)			101.0		%		90-110	02-MAY-19
WG3040533-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	02-MAY-19
WG3040533-4 MS Nitrite (as N)		L2266674-2	100.2		%		75-125	02-MAY-19
NO3-L-IC-N-VA	Water							



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA	Wate	r						
Batch R462 WG3040533-3 [Nitrate (as N)	8697 DUP	L2266674-1 0.0364	0.0367		mg/L	0.6	20	02-MAY-19
WG3040533-2 L Nitrate (as N)	.cs		101.9		%		90-110	02-MAY-19
WG3040533-1 Nitrate (as N)	ИВ		<0.0050		mg/L		0.005	02-MAY-19
WG3040533-4 Nitrate (as N)	MS	L2266674-2	97.7		%		75-125	02-MAY-19
PH-PCT-VA	Wate	r						
	2925 CRM	VA-PH7-BUF						
pH		1 0000074 4	6.99		рН		6.9-7.1	04-MAY-19
WG3040534-5 [pH	DUP	L2266674-1 7.75	7.74	J	рН	0.01	0.3	04-MAY-19
SO4-IC-N-VA	Wate	r						
	8697 DUP	L2266674-1 2.28	2.26		mg/L	0.8	20	02-MAY-19
Sulfate (SO4)	.cs		101.2		%		90-110	02-MAY-19
WG3040533-1 Sulfate (SO4)	ИB		<0.30		mg/L		0.3	02-MAY-19
WG3040533-4 Sulfate (SO4)	MS	L2266674-2	99.9		%		75-125	02-MAY-19
TDS-VA	Wate	r						
	OUP	L2266676-3	0.4		,			
Total Dissolved So		31	31		mg/L	2.4	20	06-MAY-19
WG3043368-2 L Total Dissolved So	olids		101.1		%		85-115	06-MAY-19
WG3043368-1 Notal Dissolved So	MB olids		<10		mg/L		10	06-MAY-19

Workorder: L2266676 Report Date: 05-JUN-19

GHD Limited Client: Page 14 of 15

10271 Shellbridge Way

Richmond, BC V6X 2W8

Contact: Airesse MacPhee

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.

Workorder: L2266676 Report Date: 05-JUN-19

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Contact: Airesse MacPhee

Page 15 of 15

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	01-MAY-19 10:55	04-MAY-19 09:00	0.25	70	hours	EHTR-FM
	2	01-MAY-19 11:00	04-MAY-19 09:00	0.25	70	hours	EHTR-FM
	3	01-MAY-19 10:30	04-MAY-19 09:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2266676 were received on 02-MAY-19 11:25.

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 predetermined 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

COC Number: 15 -

Environmental Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Report To	Contact and company name below will app	ear on the final report	I	Report Format		_					afi	m all E	&P TAT	with y	our AM -	- surcharg	jes will a	pply	
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Contact:	Airesse MacPhee		Quality Control	(QC) Report with Re	eport 🗹 YES	□ NO	۲ Jays}	4	day [P	4]			č	1	Busin	ness da	ıy [E1]		
Phone:			☐ Compare Result	s to Criteria on Report - I	provide details below	if bax checked	PRIDRIT (Business I	3	day [P	3]			EMERGENCY	8	same [Day, W	eeken	d or	_
	Company address below will appear on the final	report	Select Distribut	ion: 🗹 EMAIL	☐ MAIL ☐ F	AX	R Hsus)	2	day [P	2]			EM .			tory ho			
Street:	651 Colby Drive		Email 1 or Fax	airesse_macphee@	ghd.com			Date an	nd Time	Requi	red for a	II E&P	TATs:			d	d-mm	n-yy hh:	mm-
City/Province:	Waterloo, ON		Email 2	See PO	· ·		For test	s that ca	n not be	perform	ned accor	ding to	the ser	rice lev	el select	ted, you w	ill be co	ntected.	
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ALS Sample #	Sample Identification	and/or Coordinates		Date	Time	Sample Type	Alkalinity	Ammonia-N	Anions		g d	w	MET-DIS	MET-TOT					
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GHD Limited

ATTN: Airesse MacPhee

10271 Shellbridge Way Richmond, BC V6X 2W8 Date Received: 03-MAY-19

Report Date: 05-JUN-19 12:50 (MT)

Version: FINAL REV. 2

Client Phone: 604-248-3661

Certificate of Analysis

Lab Work Order #: L2267312 Project P.O. #: 73515713 Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Campbell River (Phase 02) & Schedule B

Comments: ADDITIONAL 13-MAY-19 14:11 NO2+NO3 added.

Selam Worku Account Manager

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

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2267312 CONTD.... PAGE 2 of 21

Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-1 WG-56484-010519-CF-14 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 15:30 WG WG							
Physical Tests							
Conductivity	155		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	78.7		0.50	mg/L		07-MAY-19	
pH	8.15		0.10	pН		07-MAY-19	R4628235
Total Dissolved Solids	101		13	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	76.3		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	76.3		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	1.20		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	0.138		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	0.138		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	2.86		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (AI)-Dissolved	0.0048		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00243		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.00377		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	25.2		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00047		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	3.81		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000142		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
spirotas (i) Bissorias	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.000	111g/L	30 W/AT-19	J WATE 19	117020000

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

L2267312 CONTD....

PAGE 3 of 21 Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-1 WG-56484-010519-CF-14 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 15:30 Matrix: WG							
Dissolved Metals							
Potassium (K)-Dissolved	1.13		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	0.000179		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	6.07		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	1.35		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.0308		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	0.94		0.50	mg/L	06-MAY-19	07-MAY-19	R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000130		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	0.0222		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
L2267312-2 WG-56484-010519-NT-15 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 15:45 Matrix: WG							
Physical Tests							
Conductivity	<2.0		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	<0.50		0.50	mg/L		08-MAY-19	
рН	5.51		0.10	рН		07-MAY-19	R4628235
Total Dissolved Solids	<10		10	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	<0.50		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	<0.30		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4627193
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655

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

L2267312 CONTD.... PAGE 4 of 21

Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-2 WG-56484-010519-NT-15 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 15:45 Matrix: WG							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.00015	RRV	0.00010	mg/L	08-MAY-19	07-MAY-19	R4628203
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Potassium (K)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	1
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	06-MAY-19		R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19		R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19		R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	06-MAY-19		R4625655
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19		R4625655
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19		R4625655
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19		R4625655
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
L2267312-3 WG-56484-010519-CF-16 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:45 Matrix: WG							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-3 WG-56484-010519-CF-16 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:45 Matrix: WG							
Physical Tests							
Conductivity	669		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	205		0.50	mg/L		07-MAY-19	
pH	8.30		0.10	рН		07-MAY-19	R4628235
Total Dissolved Solids	350		20	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	310		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	3.4		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	313		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	14.9		0.50	mg/L		07-MAY-19	R4626606
Chloride (CI)	32.7		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	3.07		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (Al)-Dissolved	0.0018		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00027		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.0307		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.558		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	0.000114		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	60.4		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	0.00152		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	0.0181		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	0.041		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	13.2		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	2.41		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	0.0000082		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000826		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	0.00342		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-3 WG-56484-010519-CF-16 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:45 WG WG							
Dissolved Metals							
Potassium (K)-Dissolved	11.8		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	0.00052		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	14.8		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	45.3		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.307		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	1.32		0.50	mg/L	06-MAY-19	07-MAY-19	R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	0.000016		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000421		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	0.00189		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-3 WG-56484-010519-CF-16 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:45 WG WG							
Volatile Organic Compounds							
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Methyl t-butyl ether (MTBE)	0.00068		0.00050	mg/L	08-MAY-19	10-MAY-19	
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	10-MAY-19	
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	10-MAY-19	
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	
Vinyl Chloride	<0.0040		0.00040	mg/L	08-MAY-19	10-MAY-19	R4620119
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Xylenes	<0.00075		0.00075	mg/L		10-MAY-19	11020110
Surrogate: 4-Bromofluorobenzene (SS)	93.9		70-130	g/_ %		10-MAY-19	R4620119
Surrogate: 1,4-Difluorobenzene (SS)	100.7		70-130	%		10-MAY-19	
Hydrocarbons	100.7		70 100	70		10 1111 10	11020110
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4621770
VPH (C6-C10)	<0.10		0.10	mg/L		10-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	93.6		70-130	%		09-MAY-19	R4621770
L2267312-4 WG-56484-010519-CF-17 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:50 Matrix: WG							
Physical Tests							
Conductivity	681		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	208		0.50	mg/L		07-MAY-19	
рН	8.08		0.10	pН			R4628235
Total Dissolved Solids	360		20	mg/L		07-MAY-19	
Anions and Nutrients			20	9/ =			111020000
Alkalinity, Bicarbonate (as CaCO3)	308		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	308		1.0	mg/L		07-MAY-19	
Ammonia, Total (as N)	13.4		0.50	mg/L		07-MAY-19	
Chloride (CI)	32.7		0.50	mg/L		04-MAY-19	
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	
Sulfate (SO4)	3.06		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals				3			

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-4 WG-56484-010519-CF-17 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:50 Matrix: WG							
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (AI)-Dissolved	0.0022		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00025		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.0304		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.570		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	0.000114		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	61.9		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	0.00152		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	0.0177		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	0.039		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	12.9		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	2.43		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	0.0000081		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000851		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	0.00335		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Potassium (K)-Dissolved	11.3		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	0.00052		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	14.6		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19		R4625655
Sodium (Na)-Dissolved	44.5		0.050	mg/L	06-MAY-19		R4625655
Strontium (Sr)-Dissolved	0.305		0.00020	mg/L	06-MAY-19	07-MAY-19	
Sulfur (S)-Dissolved	1.15		0.50	mg/L	06-MAY-19		R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19		R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	06-MAY-19	07-MAY-19	
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19		R4625655
Uranium (U)-Dissolved	0.000435		0.000010	mg/L	06-MAY-19		R4625655
Vanadium (V)-Dissolved	0.00177		0.00050	mg/L	06-MAY-19		R4625655
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-4 WG-56484-010519-CF-17 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:50 WG WG							
Dissolved Metals							
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Methyl t-butyl ether (MTBE)	0.00062		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	10-MAY-19	R4620119
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	10-MAY-19	R4620119
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Xylenes	<0.00075		0.00075	mg/L		10-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	96.7		70-130	%		10-MAY-19	R4620119
Surrogate: 1,4-Difluorobenzene (SS)	109.1		70-130	%		10-MAY-19	R4620119
							<u> </u>

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-4 WG-56484-010519-CF-17 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 16:50 WG WG							
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4621770
VPH (C6-C10)	<0.10		0.10	mg/L		10-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	76.8		70-130	%		09-MAY-19	R4621770
L2267312-5 WG-56484-010519-CF-18 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:30 WG WG							
Physical Tests							
Conductivity	313		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	158		0.50	mg/L		08-MAY-19	
pH	8.32		0.10	pН		07-MAY-19	R4628235
Total Dissolved Solids	192		20	mg/L		07-MAY-19	R4628538
Anions and Nutrients				-			
Alkalinity, Bicarbonate (as CaCO3)	132		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	3.8		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	135		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	4.04		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	0.955		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	0.955		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	20.7		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (Al)-Dissolved	0.0027		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00026		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.00453		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.081		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	45.9		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00136		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-5 WG-56484-010519-CF-18 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:30 Matrix: WG							
Dissolved Metals							
Magnesium (Mg)-Dissolved	10.4		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625883
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000051		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Potassium (K)-Dissolved	0.735		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	0.000114		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	7.74		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	5.22		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.0978		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	7.14		0.50	mg/L	06-MAY-19	07-MAY-19	R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000353		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	0.00605		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromodichloromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromoform	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Carbon Tetrachloride	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Chlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
Dibromochloromethane	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
Chloroethane	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
Chloroform	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
Chloromethane	<0.0050		0.0050	mg/L	08-MAY-19		R4620119
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	08-MAY-19		R4620119
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
1,1-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
1,2-Dichloroethane	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19		R4620119
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R462

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

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L2267312-5 WG-56484-010519-CF-18 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:30 WG WG							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dichloromethane	<0.0050		0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloropropane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Ethylbenzene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Styrene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	08-MAY-19	10-MAY-19	R4620119
Tetrachloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Toluene	<0.00045		0.00045	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	10-MAY-19	R4620119
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Xylenes	<0.00075		0.00075	mg/L		10-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	91.7		70-130	%		10-MAY-19	R4620119
Surrogate: 1,4-Difluorobenzene (SS)	100.2		70-130	%		10-MAY-19	R4620119
Hydrocarbons				,-			
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4621770
VPH (C6-C10)	<0.10		0.10	mg/L		10-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	109.2		70-130	%		09-MAY-19	R4621770
L2267312-6 WG-56484-010519-CF-19 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:40 Matrix: WG							
Physical Tests							
Conductivity	310		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	165		0.50	mg/L		07-MAY-19	
рН	8.31		0.10	рН		07-MAY-19	R4628235
Total Dissolved Solids	185		20	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	133		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	3.4		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	137		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		07-MAY-19	R4626606
Chloride (CI)	4.05		0.50	mg/L		04-MAY-19	R4626372

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-6 WG-56484-010519-CF-19 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:40 Matrix: WG							
Anions and Nutrients							
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	0.954		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	0.954		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	20.8		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (AI)-Dissolved	0.0019		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00023		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.00450		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.083		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	48.9		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00128		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	10.5		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000055		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R462565
Potassium (K)-Dissolved	0.734		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	0.000169		0.000050	mg/L	06-MAY-19	07-MAY-19	R462565
Silicon (Si)-Dissolved	7.66		0.050	mg/L	06-MAY-19	07-MAY-19	R462565
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	5.21		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.100		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	6.97		0.50	mg/L	06-MAY-19	07-MAY-19	R462565
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655

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

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L2267312-6 WG-56484-010519-CF-19 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:40 Matrix: WG Dissolved Metals						
Dissolved Metals						
Tin (Sn)-Dissolved	<0.00010	0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	< 0.00030	0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010	0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000369	0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	0.00586	0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	<0.0010	0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	<0.000060	0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
Volatile Organic Compounds						
Benzene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromodichloromethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromoform	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	
Carbon Tetrachloride	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Chlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dibromochloromethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	
Chloroethane	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
Chloroform	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloromethane	<0.0050	0.0050	mg/L	08-MAY-19		R4620119
1,2-Dichlorobenzene	<0.00050	0.00050	mg/L	08-MAY-19		R4620119
1,3-Dichlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,4-Dichlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	
1,1-Dichloroethane	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
1,2-Dichloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
cis-1,2-Dichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
trans-1,2-Dichloroethylene Dichloromethane	<0.0010 <0.0050	0.0010 0.0050	mg/L mg/L	08-MAY-19 08-MAY-19	10-MAY-19 10-MAY-19	R4620119
1,2-Dichloropropane	<0.0050	0.0030	mg/L	08-MAY-19	10-MAY-19	
cis-1,3-Dichloropropylene	<0.0010	0.00050	mg/L	08-MAY-19	10-MAY-19	
trans-1,3-Dichloropropylene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	
1,3-Dichloropropene (cis & trans)	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	
Ethylbenzene	<0.00050	0.00050	mg/L	08-MAY-19		R4620119
Methyl t-butyl ether (MTBE)	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	
Styrene	<0.00050	0.00050	mg/L	08-MAY-19		R4620119
1,1,1,2-Tetrachloroethane	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
1,1,2,2-Tetrachloroethane	<0.00020	0.00020	mg/L	08-MAY-19	10-MAY-19	
Tetrachloroethylene	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
Toluene	<0.00045	0.00045	mg/L	08-MAY-19		R4620119
1,1,1-Trichloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	
1,1,2-Trichloroethane	<0.00050	0.00050	mg/L	08-MAY-19		R4620119
Trichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19		R4620119
Trichlorofluoromethane	<0.0010	0.0010	mg/L	08-MAY-19		R4620119

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-6 WG-56484-010519-CF-19 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 17:40 WG WG							
Volatile Organic Compounds							
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	10-MAY-19	R4620119
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Xylenes	<0.00075		0.00075	mg/L		10-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	92.3		70-130	%		10-MAY-19	R4620119
Surrogate: 1,4-Difluorobenzene (SS)	113.3		70-130	%		10-MAY-19	R4620119
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4621770
VPH (C6-C10)	<0.10		0.10	mg/L		10-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	74.8		70-130	%		09-MAY-19	R4621770
L2267312-7 WG-56484-010519-CF-20 C.Fick/N.Turl on 01-MAY-19 @ 18:00 WG WG							
Physical Tests							
Conductivity	447		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	177		0.50	mg/L		07-MAY-19	
рН	8.32		0.10	рН		07-MAY-19	R4628235
Total Dissolved Solids	255		20	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	208		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	3.8		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	212		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	4.32		0.25	mg/L		07-MAY-19	R4626606
Chloride (CI)	16.5		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	<0.020		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	0.0050		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	3.02		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (Al)-Dissolved	0.0114		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00037		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.0113		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.145		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	0.0000558		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	60.5		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-7 WG-56484-010519-CF-20 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 18:00 Matrix: WG							
Dissolved Metals							
Cesium (Cs)-Dissolved	0.000080		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	0.00042		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	0.00492		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	1.14		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	0.000317		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	6.40		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	2.04		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000503		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	0.00133		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Potassium (K)-Dissolved	3.86		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	0.00183		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	7.52		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	18.4		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.203		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Sulfur (S)-Dissolved	1.25		0.50	mg/L	06-MAY-19	07-MAY-19	R4625655
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	0.00076		0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000118		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	0.0057		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	<0.000060		0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
L2267312-8 WG-56484-010519-CF-21 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 18:30 WG WG							
Physical Tests							
Conductivity	226		2.0	uS/cm		07-MAY-19	R4628235
Hardness (as CaCO3)	91.0		0.50	mg/L		07-MAY-19	
pH	8.21		0.10	рН		07-MAY-19	R4628235
Total Dissolved Solids	148		20	mg/L		07-MAY-19	R4628538
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	111		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-8 WG-56484-010519-CF-21 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 18:30 Matrix: WG							
Anions and Nutrients							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-MAY-19	R4628235
Alkalinity, Total (as CaCO3)	111		1.0	mg/L		07-MAY-19	R4628235
Ammonia, Total (as N)	2.11		0.13	mg/L		07-MAY-19	R4626606
Chloride (CI)	5.69		0.50	mg/L		04-MAY-19	R4626372
Fluoride (F)	0.030		0.020	mg/L		04-MAY-19	R4626372
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		13-MAY-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		04-MAY-19	R4626372
Nitrite (as N)	<0.0010		0.0010	mg/L		04-MAY-19	R4626372
Sulfate (SO4)	3.18		0.30	mg/L		04-MAY-19	R4626372
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					07-MAY-19	R4626042
Dissolved Metals Filtration Location	FIELD					06-MAY-19	R4625107
Aluminum (Al)-Dissolved	0.297		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Arsenic (As)-Dissolved	0.00170		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Barium (Ba)-Dissolved	0.00778		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Boron (B)-Dissolved	0.080		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cadmium (Cd)-Dissolved	0.0000576		0.0000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Calcium (Ca)-Dissolved	31.2		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Cesium (Cs)-Dissolved	0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Chromium (Cr)-Dissolved	0.00026		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Cobalt (Co)-Dissolved	0.00020		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Copper (Cu)-Dissolved	0.00220		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Iron (Fe)-Dissolved	0.397		0.010	mg/L	06-MAY-19	07-MAY-19	R4625655
Lead (Pb)-Dissolved	0.000138		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Magnesium (Mg)-Dissolved	3.20		0.0050	mg/L	06-MAY-19	07-MAY-19	R4625655
Manganese (Mn)-Dissolved	0.514		0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	07-MAY-19	08-MAY-19	R4628227
Molybdenum (Mo)-Dissolved	0.000405		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Nickel (Ni)-Dissolved	0.00057		0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Potassium (K)-Dissolved	2.14		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Rubidium (Rb)-Dissolved	0.00090		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silicon (Si)-Dissolved	7.28		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Sodium (Na)-Dissolved	8.69		0.050	mg/L	06-MAY-19	07-MAY-19	R4625655
Strontium (Sr)-Dissolved	0.0891		0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655

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

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L2267312-8 WG-56484-010519-CF-21 Sampled By: C.Fick/N.Turl on 01-MAY-19 @ 18:30 Matrix: WG Dissolved Metals Sulfur (S)-Dissolved	1.11 <0.00020					
Dissolved Metals						
Sulfur (S)-Dissolved						
	-0.00000	0.50	mg/L	06-MAY-19	07-MAY-19	R4625655
Tellurium (Te)-Dissolved	<0.00020	0.00020	mg/L	06-MAY-19	07-MAY-19	R4625655
Thallium (TI)-Dissolved	<0.000010	0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Thorium (Th)-Dissolved	<0.00010	0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Tin (Sn)-Dissolved	0.00020	0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Titanium (Ti)-Dissolved	0.0283	0.00030	mg/L	06-MAY-19	07-MAY-19	R4625655
Tungsten (W)-Dissolved	<0.00010	0.00010	mg/L	06-MAY-19	07-MAY-19	R4625655
Uranium (U)-Dissolved	0.000063	0.000010	mg/L	06-MAY-19	07-MAY-19	R4625655
Vanadium (V)-Dissolved	0.00129	0.00050	mg/L	06-MAY-19	07-MAY-19	R4625655
Zinc (Zn)-Dissolved	0.0012	0.0010	mg/L	06-MAY-19	07-MAY-19	R4625655
Zirconium (Zr)-Dissolved	0.00102	0.000060	mg/L	06-MAY-19	07-MAY-19	R4625655
Volatile Organic Compounds						
Benzene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromodichloromethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Bromoform	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Carbon Tetrachloride	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Chlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dibromochloromethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloroform	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Chloromethane	<0.0050	0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichlorobenzene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,4-Dichlorobenzene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1-Dichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,2-Dichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,2-Dichloroethylene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Dichloromethane	<0.0050	0.0050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,2-Dichloropropane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
cis-1,3-Dichloropropylene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
trans-1,3-Dichloropropylene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,3-Dichloropropene (cis & trans)	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Ethylbenzene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Methyl t-butyl ether (MTBE)	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
Styrene	<0.00050	0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,1,2-Tetrachloroethane	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2,2-Tetrachloroethane	<0.00020	0.00020	mg/L	08-MAY-19	10-MAY-19	R4620119
Tetrachloroethylene	<0.0010	0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
Toluene	<0.00045	0.00045	mg/L	08-MAY-19	10-MAY-19	R4620119

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2267312-8 WG-56484-010519-CF-21 C.Fick/N.Turl on 01-MAY-19 @ 18:30 WG							
Volatile Organic Compounds							
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	R4620119
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	
Trichloroethylene	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	
Trichlorofluoromethane	<0.0010		0.0010	mg/L	08-MAY-19	10-MAY-19	
Vinyl Chloride	<0.00040		0.00040	mg/L	08-MAY-19	10-MAY-19	
ortho-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	R4620119
meta- & para-Xylene	<0.00050		0.00050	mg/L	08-MAY-19	10-MAY-19	
Xylenes	<0.00075		0.00075	mg/L		10-MAY-19	
Surrogate: 4-Bromofluorobenzene (SS)	90.8		70-130	%		10-MAY-19	R4620119
Surrogate: 1,4-Difluorobenzene (SS)	104.2		70-130	%		10-MAY-19	
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	08-MAY-19	09-MAY-19	R4621770
VPH (C6-C10)	<0.10		0.10	mg/L		10-MAY-19	
Surrogate: 3,4-Dichlorotoluene (SS)	77.3		70-130	%		09-MAY-19	R4621770

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

L2267312 CONTD....

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Nitrate (as N)	В	L2267312-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2267312-2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2267312-2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2267312-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2267312-2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2267312-2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2267312-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2267312-2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2267312-2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2267312-2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2267312-2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2267312-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2267312-2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2267312-2

Sample Parameter Qualifier key listed:

Qualifier	Description							
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.							
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.							
RRV	Reported Result Verified By Repeat Analysis							

Test Method References:

ALS Test Code	Test Code Matrix Test Description		Method Reference**				
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity				

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

APHA 2320 Alkalinity

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Caboulation Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Alkalinity Species by Titration

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use **APHA 2510**

Qualitative analysis of conductivity wher only during preparation of other tests - e.g. TDS, metals, etc.

Fluoride in Water by IC F-IC-N-VA EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Hardness **APHA 2340B**

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-D-CVAA-VA Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), pressive with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

Water

Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), pleseled with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Nitrate in Water by IC (Low Level) Water EPA 300.1 (mod)

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Reference Information

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

PH-PCT-VA pH by Meter (Automated) APHA 4500-H pH Value Water

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires and procedires and PHA 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.

VH in Water by Headspace GCFID BC Env. Lab Manual (VH in Water)

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Compounds eluting between n-hexane and n-decane are measured and summed together using flame-ionization detection.

VH-SURR-FID-VA Water VH Surrogates for Waters BC Env. Lab Manual (VH in Solids)

VOC-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents GSMSated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

BTEX/MTBE/Styrene by Headspace EPA 5021A/8260C

The water sample, with added reagents GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for EPA 5035A/5021A/8260C

Waters

VPH-CALC-VA BC MOE VPH Water VPH is VH minus select aromatics

VPHw measures Volatile Petroleum Hydrocarbons in water. Results are calculated by subtraction of specific Monocyclic Aromatic Hydrocarbons from

VH6-10, as per the BC Lab Manual VPH calculation procedure.

VPHw = VH6-10 minus Benzene, Toluene, Ethylbenzene, Xylenes, and Styrene

XYLENES-CALC-VA Water Sum of Xylene Isomer CALCULATION

Concentrations Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The

DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** 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

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2267312 Report Date: 05-JUN-19 Page 1 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA Batch R4628	Water 8235							
	RM	VA-ALK-TITR-	CONTROL 102.1		%		85-115	07-MAY-19
Alkalinity, Total (as		L2267312-1 76.3	77.4		mg/L	1.4	20	07-MAY-19
WG3041726-1 M Alkalinity, Total (as	IB CaCO3)		<1.0		mg/L		1	07-MAY-19
CL-IC-N-VA	Water							
Batch R4626								
Chloride (CI)	OUP	L2267312-2 <0.50	<0.50	RPD-NA	mg/L	N/A	20	04-MAY-19
Chloride (CI)	CS		101.0		%		90-110	04-MAY-19
WG3041727-1 M Chloride (CI)	IB		<0.50		mg/L		0.5	04-MAY-19
WG3041727-4 M Chloride (CI)	IS .	L2267312-1	103.1		%		75-125	04-MAY-19
EC-PCT-VA	Water							
Batch R4628								
WG3041726-4 C Conductivity	RM	VA-EC-PCT-C	ONTROL 101.8		%		90-110	07-MAY-19
WG3041726-5 D Conductivity	OUP	L2267312-1 155	154		uS/cm	0.3	10	07-MAY-19
WG3041726-1 M Conductivity	1B		<2.0		uS/cm		2	07-MAY-19
F-IC-N-VA	Water							
Batch R4626	6372							
WG3041727-3 D Fluoride (F)	UP	L2267312-2 <0.020	<0.020	RPD-NA	mg/L	N/A	20	04-MAY-19
WG3041727-2 Le Fluoride (F)	cs		101.2		%		90-110	04-MAY-19
WG3041727-1 M Fluoride (F)	IB		<0.020		mg/L		0.02	04-MAY-19
WG3041727-4 M Fluoride (F)	ıs	L2267312-1	103.0		%		75-125	04-MAY-19
HG-D-CVAA-VA	Water							



Workorder: L2267312 Report Date: 05-JUN-19 Page 2 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4628227 WG3043651-3 DUP Mercury (Hg)-Dissolved		L2266587-1 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	08-MAY-19
WG3043651-2 LCS Mercury (Hg)-Dissolved			100.7		%		80-120	08-MAY-19
WG3043651-1 MB Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	08-MAY-19
WG3043651-4 MS Mercury (Hg)-Dissolved		L2266587-3	98.9		%		70-130	08-MAY-19
MET-D-CCMS-VA	Water							
Batch R4625655								
WG3042715-3 DUP Aluminum (Al)-Dissolved		L2267312-2 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-MAY-19
Cadmium (Cd)-Dissolved	i	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Calcium (Ca)-Dissolved		< 0.050	< 0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Chromium (Cr)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Magnesium (Mg)-Dissolv	red	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-MAY-19
Manganese (Mn)-Dissolv	red .	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Molybdenum (Mo)-Dissol	lved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Phosphorus (P)-Dissolve	d	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Rubidium (Rb)-Dissolved	I	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19



Workorder: L2267312 Report Date: 05-JUN-19 Page 3 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4625655								
WG3042715-3 DUP		L2267312-2	0.000040					
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Strontium (Sr)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-MAY-19
Tellurium (Te)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Thallium (TI)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	07-MAY-19
Tungsten (W)-Dissolved	t	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Vanadium (V)-Dissolved	t	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Zirconium (Zr)-Dissolved	d	<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	07-MAY-19
WG3042715-2 LCS								
Aluminum (Al)-Dissolved	d		104.2		%		80-120	07-MAY-19
Antimony (Sb)-Dissolved	d		107.1		%		80-120	07-MAY-19
Arsenic (As)-Dissolved			102.2		%		80-120	07-MAY-19
Barium (Ba)-Dissolved			104.7		%		80-120	07-MAY-19
Beryllium (Be)-Dissolved	d		103.6		%		80-120	07-MAY-19
Bismuth (Bi)-Dissolved			106.1		%		80-120	07-MAY-19
Boron (B)-Dissolved			99.3		%		80-120	07-MAY-19
Cadmium (Cd)-Dissolve	ed		108.6		%		80-120	07-MAY-19
Calcium (Ca)-Dissolved			103.0		%		80-120	07-MAY-19
Cesium (Cs)-Dissolved			104.0		%		80-120	07-MAY-19
Chromium (Cr)-Dissolve	ed		100.9		%		80-120	07-MAY-19
Cobalt (Co)-Dissolved			103.2		%		80-120	07-MAY-19
Copper (Cu)-Dissolved			103.0		%		80-120	07-MAY-19
Iron (Fe)-Dissolved			102.6		%		80-120	07-MAY-19
Lead (Pb)-Dissolved			106.3		%		80-120	07-MAY-19
Lithium (Li)-Dissolved			104.8		%		80-120	07-MAY-19
Magnesium (Mg)-Dissol	ved		110.7		%		80-120	07-MAY-19
Manganese (Mn)-Dissol	ved		105.3		%		80-120	07-MAY-19



Workorder: L2267312 Report Date: 05-JUN-19 Page 4 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R462565	5							
WG3042715-2 LCS			400.0		0/			
Molybdenum (Mo)-Dis	solvea		108.8		%		80-120	07-MAY-19
Nickel (Ni)-Dissolved			102.4		%		80-120	07-MAY-19
Phosphorus (P)-Disso			99.6		%		70-130	07-MAY-19
Potassium (K)-Dissolv			103.8		%		80-120	07-MAY-19
Rubidium (Rb)-Dissolv			101.9		%		80-120	07-MAY-19
Selenium (Se)-Dissolv	ed		103.8		%		80-120	07-MAY-19
Silicon (Si)-Dissolved			112.9		%		60-140	07-MAY-19
Silver (Ag)-Dissolved			103.6		%		80-120	07-MAY-19
Sodium (Na)-Dissolved			103.5		%		80-120	07-MAY-19
Strontium (Sr)-Dissolv	ed		108.8		%		80-120	07-MAY-19
Sulfur (S)-Dissolved			104.5		%		80-120	07-MAY-19
Tellurium (Te)-Dissolv	ed		101.8		%		80-120	07-MAY-19
Thallium (TI)-Dissolved	t		103.3		%		80-120	07-MAY-19
Thorium (Th)-Dissolve	d		104.2		%		80-120	07-MAY-19
Tin (Sn)-Dissolved			106.8		%		80-120	07-MAY-19
Titanium (Ti)-Dissolve	d		97.4		%		80-120	07-MAY-19
Tungsten (W)-Dissolve	ed		101.5		%		80-120	07-MAY-19
Uranium (U)-Dissolved	d		111.8		%		80-120	07-MAY-19
Vanadium (V)-Dissolve	ed		103.8		%		80-120	07-MAY-19
Zinc (Zn)-Dissolved			108.3		%		80-120	07-MAY-19
Zirconium (Zr)-Dissolv	ed		108.5		%		80-120	07-MAY-19
WG3042715-1 MB								
Aluminum (AI)-Dissolv	ed		<0.0010		mg/L		0.001	07-MAY-19
Antimony (Sb)-Dissolv	ed		<0.00010		mg/L		0.0001	07-MAY-19
Arsenic (As)-Dissolved	i		<0.00010		mg/L		0.0001	07-MAY-19
Barium (Ba)-Dissolved	l		<0.00010		mg/L		0.0001	07-MAY-19
Beryllium (Be)-Dissolv	ed		<0.00010		mg/L		0.0001	07-MAY-19
Bismuth (Bi)-Dissolved	d		<0.00005	0	mg/L		0.00005	07-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Cadmium (Cd)-Dissolv	ved .		<0.00000	5 C	mg/L		0.000005	07-MAY-19
Calcium (Ca)-Dissolve	d		<0.050		mg/L		0.05	07-MAY-19
Cesium (Cs)-Dissolved	d		<0.00001	0	mg/L		0.00001	07-MAY-19
Chromium (Cr)-Dissolv	ved		<0.00010		mg/L		0.0001	07-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R46256	55							
WG3042715-1 MB							0.0000	
Copper (Cu)-Dissolve	ea		<0.00020		mg/L		0.0002	07-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Lead (Pb)-Dissolved			<0.000050	J	mg/L		0.00005	07-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAY-19
Magnesium (Mg)-Dis			<0.0050		mg/L		0.005	07-MAY-19
Manganese (Mn)-Dis			<0.00010		mg/L		0.0001	07-MAY-19
Molybdenum (Mo)-Di			<0.000050	J	mg/L		0.00005	07-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-19
Phosphorus (P)-Disse			<0.050		mg/L		0.05	07-MAY-19
Potassium (K)-Dissol			<0.050		mg/L		0.05	07-MAY-19
Rubidium (Rb)-Disso			<0.00020		mg/L		0.0002	07-MAY-19
Selenium (Se)-Dissol			<0.000050	J	mg/L		0.00005	07-MAY-19
Silicon (Si)-Dissolved			<0.050	,	mg/L		0.05	07-MAY-19
Silver (Ag)-Dissolved			<0.000010	J	mg/L		0.00001	07-MAY-19
Sodium (Na)-Dissolve			<0.050		mg/L		0.05	07-MAY-19
Strontium (Sr)-Dissol	vea		<0.00020		mg/L		0.0002 0.5	07-MAY-19
Sulfur (S)-Dissolved	wod		<0.50		mg/L		0.0002	07-MAY-19
Tellurium (Te)-Dissol			<0.00020 <0.000010	1	mg/L		0.0002	07-MAY-19
Thallium (TI)-Dissolve Thorium (Th)-Dissolve			<0.00010	J	mg/L mg/L		0.00001	07-MAY-19
Tin (Sn)-Dissolved	eu		<0.00010				0.0001	07-MAY-19
Titanium (Ti)-Dissolve	ad		<0.00010		mg/L mg/L		0.0001	07-MAY-19
Tungsten (W)-Dissolv			<0.00030		mg/L		0.0003	07-MAY-19
Uranium (U)-Dissolve			<0.00010	1	mg/L		0.0001	07-MAY-19
Vanadium (V)-Dissolv			<0.00050	,	mg/L		0.0005	07-MAY-19 07-MAY-19
Zinc (Zn)-Dissolved	veu		<0.0010		mg/L		0.0003	07-MAY-19
Zirconium (Zr)-Dissol	ved		<0.000060	1	mg/L		0.00006	
	veu	1 2267242 4	<0.000000	,	mg/L		0.00000	07-MAY-19
WG3042715-4 MS Aluminum (Al)-Dissol	ved	L2267312-1	98.5		%		70-130	07-MAY-19
Antimony (Sb)-Dissol	ved		101.6		%		70-130	07-MAY-19
Arsenic (As)-Dissolve	ed		103.2		%		70-130	07-MAY-19
Barium (Ba)-Dissolve	d		99.2		%		70-130	07-MAY-19
Beryllium (Be)-Dissol	ved		98.6		%		70-130	07-MAY-19
Bismuth (Bi)-Dissolve	ed		96.4		%		70-130	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R46256	655							
WG3042715-4 MS		L2267312-1			0.4			
Boron (B)-Dissolved			91.9		%		70-130	07-MAY-19
Cadmium (Cd)-Diss			104.7		%		70-130	07-MAY-19
Calcium (Ca)-Dissol			N/A	MS-B	%		-	07-MAY-19
Cesium (Cs)-Dissolv			101.7		%		70-130	07-MAY-19
Chromium (Cr)-Diss			97.0		%		70-130	07-MAY-19
Cobalt (Co)-Dissolve			98.6		%		70-130	07-MAY-19
Copper (Cu)-Dissolv	red		99.0		%		70-130	07-MAY-19
Iron (Fe)-Dissolved			97.0		%		70-130	07-MAY-19
Lead (Pb)-Dissolved	I		100.3		%		70-130	07-MAY-19
Lithium (Li)-Dissolve	ed		96.4		%		70-130	07-MAY-19
Magnesium (Mg)-Dis	ssolved		N/A	MS-B	%		-	07-MAY-19
Manganese (Mn)-Di	ssolved		105.1		%		70-130	07-MAY-19
Molybdenum (Mo)-D	issolved		100.7		%		70-130	07-MAY-19
Nickel (Ni)-Dissolved	d		98.3		%		70-130	07-MAY-19
Phosphorus (P)-Diss	solved		100.5		%		70-130	07-MAY-19
Potassium (K)-Disso	olved		98.6		%		70-130	07-MAY-19
Rubidium (Rb)-Disso	olved		102.5		%		70-130	07-MAY-19
Selenium (Se)-Disso	olved		112.1		%		70-130	07-MAY-19
Silicon (Si)-Dissolve	d		99.5		%		70-130	07-MAY-19
Silver (Ag)-Dissolved	d		100.1		%		70-130	07-MAY-19
Sodium (Na)-Dissolv	/ed		101.6		%		70-130	07-MAY-19
Strontium (Sr)-Disso	olved		N/A	MS-B	%		=	07-MAY-19
Sulfur (S)-Dissolved			102.7		%		70-130	07-MAY-19
Tellurium (Te)-Disso	olved		106.1		%		70-130	07-MAY-19
Thallium (TI)-Dissolv	/ed		93.3		%		70-130	07-MAY-19
Thorium (Th)-Dissol	ved		100.8		%		70-130	07-MAY-19
Tin (Sn)-Dissolved			100.1		%		70-130	07-MAY-19
Titanium (Ti)-Dissolv	ved		94.3		%		70-130	07-MAY-19
Tungsten (W)-Disso			97.9		%		70-130	07-MAY-19
Uranium (U)-Dissolv			105.4		%		70-130	07-MAY-19
Vanadium (V)-Disso			99.4		%		70-130	07-MAY-19
Zinc (Zn)-Dissolved			105.7		%		70-130	07-MAY-19
Zirconium (Zr)-Disso	olved		103.3		%		70-130	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4628089								
WG3043933-2 LCS Silver (Ag)-Dissolved			98.7		%		80-120	08-MAY-19
Batch R4628203								
WG3043933-3 DUP Aluminum (Al)-Dissolve	d	L2266971-11 0.442	0.396		mg/L	4.2	20	07-MAY-19
Antimony (Sb)-Dissolve		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Arsenic (As)-Dissolved		0.00140	0.00127	111 2 1111	mg/L	3.5	20	07-MAY-19
Barium (Ba)-Dissolved		0.0178	0.0186		mg/L	6.9	20	07-MAY-19
Beryllium (Be)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Boron (B)-Dissolved		0.122	0.125		mg/L	0.9	20	07-MAY-19
Cadmium (Cd)-Dissolve	ed	0.0000109	0.0000099		mg/L	18	20	07-MAY-19
Calcium (Ca)-Dissolved	l	13.9	14.5		mg/L	1.0	20	07-MAY-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Chromium (Cr)-Dissolve	ed	0.0149	0.0142		mg/L	3.3	20	07-MAY-19
Cobalt (Co)-Dissolved		0.00063	0.00060		mg/L	5.7	20	07-MAY-19
Copper (Cu)-Dissolved		0.00518	0.00532		mg/L	2.7	20	07-MAY-19
Iron (Fe)-Dissolved		12.3	11.5		mg/L	1.2	20	07-MAY-19
Lead (Pb)-Dissolved		0.000281	0.000278		mg/L	0.6	20	07-MAY-19
Lithium (Li)-Dissolved		0.0079	0.0084		mg/L	0.3	20	07-MAY-19
Magnesium (Mg)-Disso	lved	19.6	18.6		mg/L	3.8	20	07-MAY-19
Manganese (Mn)-Disso	lved	0.330	0.311		mg/L	3.2	20	07-MAY-19
Molybdenum (Mo)-Diss	olved	0.000353	0.000353		mg/L	0.1	20	07-MAY-19
Nickel (Ni)-Dissolved		0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Phosphorus (P)-Dissolv	red	0.627	0.522		mg/L	1.9	20	07-MAY-19
Potassium (K)-Dissolve	d	11.0	10.2		mg/L	3.0	20	07-MAY-19
Rubidium (Rb)-Dissolve	ed	0.00267	0.00276		mg/L	10	20	07-MAY-19
Silicon (Si)-Dissolved		25.8	23.2		mg/L	1.7	20	07-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Sodium (Na)-Dissolved		92.8	90.5		mg/L	4.9	20	07-MAY-19
Strontium (Sr)-Dissolve	d	0.133	0.128		mg/L	0.4	20	07-MAY-19
Sulfur (S)-Dissolved		0.74	0.59		mg/L	19	20	07-MAY-19
Tellurium (Te)-Dissolve	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4628203								
WG3043933-3 DUP		L2266971-11	0.000040					
Thallium (TI)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Thorium (Th)-Dissolved		0.00031	0.00027		mg/L	1.3	20	07-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Titanium (Ti)-Dissolved		0.0894	0.0806		mg/L	1.3	20	07-MAY-19
Tungsten (W)-Dissolved	l	0.00012	0.00012		mg/L	1.7	20	07-MAY-19
Uranium (U)-Dissolved	_	0.000334	0.000344		mg/L	0.0	20	07-MAY-19
Vanadium (V)-Dissolved		0.0773	0.0757		mg/L	3.5	20	07-MAY-19
Zinc (Zn)-Dissolved		0.0064	0.0067		mg/L	3.4	20	07-MAY-19
Zirconium (Zr)-Dissolved	d	0.00315	0.00300		mg/L	2.4	20	07-MAY-19
WG3043933-5 DUP Aluminum (Al)-Dissolved	d	L2266567-1 < 0.0030	<0.0030	RPD-NA	mg/L	N/A	20	07-MAY-19
Antimony (Sb)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Arsenic (As)-Dissolved		0.00091	0.00083		mg/L	1.8	20	07-MAY-19
Barium (Ba)-Dissolved		0.305	0.318		mg/L	0.6	20	07-MAY-19
Beryllium (Be)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Boron (B)-Dissolved		0.025	0.027		mg/L	3.6	20	07-MAY-19
Cadmium (Cd)-Dissolve	d	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Calcium (Ca)-Dissolved		69.0	73.4		mg/L	1.8	20	07-MAY-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Chromium (Cr)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Cobalt (Co)-Dissolved		0.00024	0.00024		mg/L	0.4	20	07-MAY-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Iron (Fe)-Dissolved		0.414	0.392		mg/L	2.0	20	07-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Lithium (Li)-Dissolved		0.0179	0.0194		mg/L	0.0	20	07-MAY-19
Magnesium (Mg)-Dissol	ved	28.4	28.3		mg/L	1.1	20	07-MAY-19
Manganese (Mn)-Dissol	ved	0.446	0.421		mg/L	1.2	20	07-MAY-19
Molybdenum (Mo)-Disso	olved	0.00565	0.00594		mg/L	3.6	20	07-MAY-19
Nickel (Ni)-Dissolved		0.00167	0.00160		mg/L	0.1	20	07-MAY-19
Phosphorus (P)-Dissolve	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Potassium (K)-Dissolved	t	1.84	1.99		mg/L	0.7	20	07-MAY-19
Rubidium (Rb)-Dissolve	d	0.00049	0.00054		mg/L	1.0	20	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4628203								
WG3043933-5 DUP	۵	L2266567-1	0.000050	DDD 114		N 1/A	00	
Selenium (Se)-Dissolve	a	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Silicon (Si)-Dissolved		3.70	3.60		mg/L	2.2	20	07-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Sodium (Na)-Dissolved	.1	6.23	6.59		mg/L	2.0	20	07-MAY-19
Strontium (Sr)-Dissolve	a	0.358	0.381		mg/L	1.3	20	07-MAY-19
Sulfur (S)-Dissolved		7.98	7.96		mg/L	6.5	20	07-MAY-19
Tellurium (Te)-Dissolve	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Thallium (TI)-Dissolved		0.000095	0.000099		mg/L	3.8	20	07-MAY-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-MAY-19
Tungsten (W)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Uranium (U)-Dissolved		0.000564	0.000603		mg/L	6.3	20	07-MAY-19
Vanadium (V)-Dissolve	b	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Zirconium (Zr)-Dissolve	d	<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	07-MAY-19
WG3043933-6 DUP Aluminum (Al)-Dissolve	d	L2267312-2 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Antimony (Sb)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Barium (Ba)-Dissolved		0.00015	0.00015		mg/L	1.2	20	07-MAY-19
Beryllium (Be)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-MAY-19
Cadmium (Cd)-Dissolve	ed	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Calcium (Ca)-Dissolved	I	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Chromium (Cr)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R462820)3							
WG3043933-6 DUF Magnesium (Mg)-Diss		L2267312-2 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-MAY-19
Manganese (Mn)-Diss		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Molybdenum (Mo)-Dis		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Phosphorus (P)-Disso	olved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Potassium (K)-Dissol	ved	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Rubidium (Rb)-Dissol	ved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Selenium (Se)-Dissol	ved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-MAY-19
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Sodium (Na)-Dissolve	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-MAY-19
Strontium (Sr)-Dissolv	ved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-MAY-19
Tellurium (Te)-Dissolv	ved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-MAY-19
Thallium (TI)-Dissolve	ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Thorium (Th)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Titanium (Ti)-Dissolve	ed	<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	07-MAY-19
Tungsten (W)-Dissolv	/ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-MAY-19
Uranium (U)-Dissolve	ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-MAY-19
Vanadium (V)-Dissolv	/ed	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-MAY-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAY-19
Zirconium (Zr)-Dissol	ved	<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	07-MAY-19
WG3043933-2 LCS Aluminum (Al)-Dissol			100.8		%		00.400	07.141/.40
Antimony (Sb)-Dissol			97.4		%		80-120	07-MAY-19
Arsenic (As)-Dissolve			100.6		%		80-120 80-120	07-MAY-19
Barium (Ba)-Dissolve			100.5		%		80-120	07-MAY-19 07-MAY-19
Beryllium (Be)-Dissolve			96.9		%		80-120 80-120	07-MAY-19 07-MAY-19
Bismuth (Bi)-Dissolve			101.9		%		80-120	07-MAY-19
Boron (B)-Dissolved	-		95.8		%		80-120	07-MAY-19
Cadmium (Cd)-Dissol	lved		101.6		%		80-120	07-MAY-19
Calcium (Ca)-Dissolv			97.7		%		80-120	07-MAY-19
1 1 1 1 1 (1 1.7) = 1300.00			-				00 120	37 100 10



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							_
Batch R46282	03							
WG3043933-2 LCS					0.4			
Cesium (Cs)-Dissolve			96.8		%		80-120	07-MAY-19
Chromium (Cr)-Disso			105.3		%		80-120	07-MAY-19
Cobalt (Co)-Dissolve			101.0		%		80-120	07-MAY-19
Copper (Cu)-Dissolve	ed		100.5		%		80-120	07-MAY-19
Iron (Fe)-Dissolved			97.9		%		80-120	07-MAY-19
Lead (Pb)-Dissolved			101.1		%		80-120	07-MAY-19
Lithium (Li)-Dissolved			96.9		%		80-120	07-MAY-19
Magnesium (Mg)-Dis			100.0		%		80-120	07-MAY-19
Manganese (Mn)-Dis			103.6		%		80-120	07-MAY-19
Molybdenum (Mo)-Di			98.0		%		80-120	07-MAY-19
Nickel (Ni)-Dissolved			103.4		%		80-120	07-MAY-19
Phosphorus (P)-Diss			108.5		%		70-130	07-MAY-19
Potassium (K)-Dissol			106.5		%		80-120	07-MAY-19
Rubidium (Rb)-Disso			105.6		%		80-120	07-MAY-19
Selenium (Se)-Dissol	lved		103.4		%		80-120	07-MAY-19
Silicon (Si)-Dissolved			95.9		%		60-140	07-MAY-19
Sodium (Na)-Dissolve	ed		107.2		%		80-120	07-MAY-19
Strontium (Sr)-Dissol	ved		97.2		%		80-120	07-MAY-19
Sulfur (S)-Dissolved			105.7		%		80-120	07-MAY-19
Tellurium (Te)-Dissol	ved		97.5		%		80-120	07-MAY-19
Thallium (TI)-Dissolve	ed		101.7		%		80-120	07-MAY-19
Thorium (Th)-Dissolv	red		97.5		%		80-120	07-MAY-19
Tin (Sn)-Dissolved			97.5		%		80-120	07-MAY-19
Titanium (Ti)-Dissolve	ed		103.3		%		80-120	07-MAY-19
Tungsten (W)-Dissol	ved		102.2		%		80-120	07-MAY-19
Uranium (U)-Dissolve	ed		105.7		%		80-120	07-MAY-19
Vanadium (V)-Dissol	ved		105.1		%		80-120	07-MAY-19
Zinc (Zn)-Dissolved			103.5		%		80-120	07-MAY-19
Zirconium (Zr)-Dissol	ved		94.3		%		80-120	07-MAY-19
WG3043933-1 MB Aluminum (Al)-Dissol			<0.0010		mg/L		0.001	07-MAY-19
Antimony (Sb)-Dissol			<0.00010)	mg/L		0.0001	07-MAY-19
Arsenic (As)-Dissolve			<0.00010		mg/L		0.0001	07-MAY-19
Barium (Ba)-Dissolve			<0.00010		mg/L		0.0001	07-MAY-19
Dariam (Da) Dissolve			~0.000 TC	•	1119/ L		0.0001	01-1VIA 1-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R46282	03							
WG3043933-1 MB					,,		0.0004	
Beryllium (Be)-Disso			<0.00010		mg/L		0.0001	07-MAY-19
Bismuth (Bi)-Dissolve	ea		<0.000050)	mg/L		0.00005	07-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Cadmium (Cd)-Disso			<0.000005)(mg/L		0.000005	07-MAY-19
Calcium (Ca)-Dissolv			<0.050	_	mg/L		0.05	07-MAY-19
Cesium (Cs)-Dissolv			<0.000010)	mg/L		0.00001	07-MAY-19
Chromium (Cr)-Disso			<0.00010		mg/L		0.0001	07-MAY-19
Cobalt (Co)-Dissolve			<0.00010		mg/L		0.0001	07-MAY-19
Copper (Cu)-Dissolve	ed		<0.00020		mg/L		0.0002	07-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Lead (Pb)-Dissolved			<0.000050)	mg/L		0.00005	07-MAY-19
Lithium (Li)-Dissolve			<0.0010		mg/L		0.001	07-MAY-19
Magnesium (Mg)-Dis	solved		<0.0050		mg/L		0.005	07-MAY-19
Manganese (Mn)-Dis	solved		<0.00010		mg/L		0.0001	07-MAY-19
Molybdenum (Mo)-Di	ssolved		<0.000050)	mg/L		0.00005	07-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-19
Phosphorus (P)-Diss	olved		< 0.050		mg/L		0.05	07-MAY-19
Potassium (K)-Disso	lved		<0.050		mg/L		0.05	07-MAY-19
Rubidium (Rb)-Disso	lved		<0.00020		mg/L		0.0002	07-MAY-19
Selenium (Se)-Disso	lved		<0.000050)	mg/L		0.00005	07-MAY-19
Silicon (Si)-Dissolved	I		< 0.050		mg/L		0.05	07-MAY-19
Silver (Ag)-Dissolved			<0.000010)	mg/L		0.00001	07-MAY-19
Sodium (Na)-Dissolv	ed		< 0.050		mg/L		0.05	07-MAY-19
Strontium (Sr)-Disso	ved		<0.00020		mg/L		0.0002	07-MAY-19
Sulfur (S)-Dissolved			< 0.50		mg/L		0.5	07-MAY-19
Tellurium (Te)-Disso	ved		<0.00020		mg/L		0.0002	07-MAY-19
Thallium (TI)-Dissolv	ed		<0.000010)	mg/L		0.00001	07-MAY-19
Thorium (Th)-Dissolv	red .		<0.00010		mg/L		0.0001	07-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Titanium (Ti)-Dissolv	ed		<0.00030		mg/L		0.0003	07-MAY-19
Tungsten (W)-Dissol	ved		<0.00010		mg/L		0.0001	07-MAY-19
Uranium (U)-Dissolve	ed		<0.000010)	mg/L		0.00001	07-MAY-19
Vanadium (V)-Dissol	ved		<0.00050		mg/L		0.0005	07-MAY-19
1								



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4628203								
WG3043933-1 MB Zinc (Zn)-Dissolved			-0.0010		ma/l		0.001	07.141/.40
Ziric (Ziri)-Dissolved Zirconium (Zr)-Dissolve	od.		<0.0010 <0.000060	n	mg/L mg/L		0.0001	07-MAY-19
` ,	eu .	1 0000074 4	<0.000060	J	IIIg/L		0.00000	07-MAY-19
WG3043933-4 MS Aluminum (AI)-Dissolve	ed	L2269071-1	93.6		%		70-130	07-MAY-19
Antimony (Sb)-Dissolve	ed		97.9		%		70-130	07-MAY-19
Arsenic (As)-Dissolved			103.4		%		70-130	07-MAY-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	07-MAY-19
Beryllium (Be)-Dissolve	ed		92.6		%		70-130	07-MAY-19
Bismuth (Bi)-Dissolved			85.9		%		70-130	07-MAY-19
Boron (B)-Dissolved			N/A	MS-B	%		-	07-MAY-19
Cadmium (Cd)-Dissolve	ed		98.8		%		70-130	07-MAY-19
Calcium (Ca)-Dissolved	d		N/A	MS-B	%		-	07-MAY-19
Cesium (Cs)-Dissolved			96.8		%		70-130	07-MAY-19
Chromium (Cr)-Dissolv	ed		99.0		%		70-130	07-MAY-19
Cobalt (Co)-Dissolved			93.5		%		70-130	07-MAY-19
Copper (Cu)-Dissolved			88.2		%		70-130	07-MAY-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	07-MAY-19
Lead (Pb)-Dissolved			93.6		%		70-130	07-MAY-19
Lithium (Li)-Dissolved			94.8		%		70-130	07-MAY-19
Magnesium (Mg)-Disso	lved		N/A	MS-B	%		-	07-MAY-19
Manganese (Mn)-Disso	lved		N/A	MS-B	%		-	07-MAY-19
Molybdenum (Mo)-Diss	olved		97.8		%		70-130	07-MAY-19
Nickel (Ni)-Dissolved			93.7		%		70-130	07-MAY-19
Phosphorus (P)-Dissolv	/ed		108.7		%		70-130	07-MAY-19
Potassium (K)-Dissolve	ed		N/A	MS-B	%		-	07-MAY-19
Rubidium (Rb)-Dissolve			102.6		%		70-130	07-MAY-19
Selenium (Se)-Dissolve	ed		94.7		%		70-130	07-MAY-19
Silicon (Si)-Dissolved			82.9		%		70-130	07-MAY-19
Silver (Ag)-Dissolved			86.6		%		70-130	07-MAY-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	07-MAY-19
Strontium (Sr)-Dissolve	d		N/A	MS-B	%		-	07-MAY-19
Sulfur (S)-Dissolved			N/A	MS-B	%		-	07-MAY-19
Tellurium (Te)-Dissolve	ed		94.5		%		70-130	07-MAY-19
Thallium (TI)-Dissolved			94.2		%		70-130	07-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4628203								
WG3043933-4 MS		L2269071-1	400.0		0/			
Thorium (Th)-Dissolved Tin (Sn)-Dissolved			100.0		%		70-130	07-MAY-19
, ,			97.0 99.4		%		70-130	07-MAY-19
Titanium (Ti)-Dissolved Tungsten (W)-Dissolved	ı		99.4		%		70-130	07-MAY-19
Uranium (U)-Dissolved	l		99.7		%		70-130 70-130	07-MAY-19
Vanadium (V)-Dissolved	1		102.0		%		70-130 70-130	07-MAY-19
Zinc (Zn)-Dissolved			95.4		%			07-MAY-19
Zirconium (Zr)-Dissolved	1		99.6		%		70-130	07-MAY-19 07-MAY-19
			33.0		76		70-130	U7-IVIA 1-19
NH3-F-VA	Water							
Batch R4626606 WG3043454-3 DUP		1 2266676 4						
Ammonia, Total (as N)		L2266676-1 0.0447	0.0448		mg/L	0.1	20	07-MAY-19
WG3043454-2 LCS								
Ammonia, Total (as N)			91.1		%		85-115	07-MAY-19
WG3043454-1 MB								
Ammonia, Total (as N)			<0.0050		mg/L		0.005	07-MAY-19
WG3043454-4 MS		L2266676-2	90.7		0/		75.405	07.1407/40
Ammonia, Total (as N)			89.7		%		75-125	07-MAY-19
NO2-L-IC-N-VA	Water							
Batch R4626372								
WG3041727-3 DUP Nitrite (as N)		L2267312-2 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-MAY-19
WG3041727-2 LCS				2	3	,, .		0111111111
Nitrite (as N)			100.1		%		90-110	04-MAY-19
WG3041727-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-MAY-19
WG3041727-4 MS		L2267312-1	404.5		0/			
Nitrite (as N)			101.5		%		75-125	04-MAY-19
NO3-L-IC-N-VA	Water							
Batch R4626372								
WG3041727-3 DUP Nitrate (as N)		L2267312-2 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-MAY-19
WG3041727-2 LCS								
Nitrate (as N)			100.6		%		90-110	04-MAY-19
WG3041727-1 MB			0.0400	_			0.005	
Nitrate (as N)			0.0133	В			0.005	



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Contact: Airesse MacPhee

VOC-HSMS-VA

Water

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA	Water		<u> </u>					
Batch R4626372 WG3041727-1 MB Nitrate (as N)			0.0133	В	mg/L		0.005	04-MAY-19
WG3041727-4 MS Nitrate (as N)		L2267312-1	102.3		%		75-125	04-MAY-19
PH-PCT-VA	Water							
Batch R4628235 WG3041726-2 CRM pH		VA-PH7-BUF	6.98		рН		6.9-7.1	07-MAY-19
WG3041726-5 DUP pH		L2267312-1 8.15	8.16	J	рН	0.01	0.3	07-MAY-19
SO4-IC-N-VA	Water							
Batch R4626372 WG3041727-3 DUP Sulfate (SO4)		L2267312-2 <0.30	<0.30	RPD-NA	mg/L	N/A	20	04-MAY-19
WG3041727-2 LCS Sulfate (SO4)			101.7		%		90-110	04-MAY-19
WG3041727-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	04-MAY-19
WG3041727-4 MS Sulfate (SO4)		L2267312-1	102.7		%		75-125	04-MAY-19
TDS-VA	Water							
Batch R4628538 WG3043683-3 DUP Total Dissolved Solids		L2267312-1 101	98		mg/L	2.7	20	07-MAY-19
WG3043683-2 LCS Total Dissolved Solids			97.9		%		85-115	07-MAY-19
WG3043683-1 MB Total Dissolved Solids			<10		mg/L		10	07-MAY-19
VH-HSFID-VA	Water							
Batch R4621770 WG3044480-3 DUP Volatile Hydrocarbons (L2267314-5 <0.10	<0.10	RPD-NA	mg/L	N/A	30	09-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test I	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4620119								
WG3044480-3 DUP Bromodichloromethane		L2267314-5	0.0040	DDD 114	m a/l	N 1/A	00	
		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Bromoform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Carbon Tetrachloride		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Chlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Dibromochloromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Chloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	10-MAY-19
Chloroform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Chloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	10-MAY-19
1,2-Dichlorobenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
1,3-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,4-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1-Dichloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,2-Dichloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1-Dichloroethylene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
cis-1,2-Dichloroethylene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
trans-1,2-Dichloroethylene)	<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Dichloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	10-MAY-19
1,2-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
cis-1,3-Dichloropropylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
trans-1,3-Dichloropropyler	ne	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1,1,2-Tetrachloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1,2,2-Tetrachloroethane		<0.00020	<0.00020	RPD-NA	mg/L	N/A	30	10-MAY-19
Tetrachloroethylene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1,1-Trichloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
1,1,2-Trichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Trichloroethylene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	10-MAY-19
Trichlorofluoromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	10-MAY-19
Vinyl Chloride		<0.00040	<0.00040	RPD-NA	mg/L	N/A	50	10-MAY-19
WG3044480-2 LCS Bromodichloromethane			84.7		%		70-130	10-MAY-19
Bromoform			96.5		%		70-130	10-MAY-19
Carbon Tetrachloride			85.3		%		70-130	10-MAY-19
Chlorobenzene			103.8		%		70-130	10-MAY-19



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Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4620119								
WG3044480-2 LCS			1011		0/			
Dibromochloromethane			124.1		%		70-130	10-MAY-19
Chloroethane			87.1		%		60-140	10-MAY-19
Chloroform			95.3		%		70-130	10-MAY-19
Chloromethane			104.1		%		60-140	10-MAY-19
1,2-Dichlorobenzene			106.1		%		70-130	10-MAY-19
1,3-Dichlorobenzene			89.0		%		70-130	10-MAY-19
1,4-Dichlorobenzene			95.9		%		70-130	10-MAY-19
1,1-Dichloroethane			91.5		%		70-130	10-MAY-19
1,2-Dichloroethane			91.3		%		70-130	10-MAY-19
1,1-Dichloroethylene			88.1		%		70-130	10-MAY-19
cis-1,2-Dichloroethylene			90.2		%		70-130	10-MAY-19
trans-1,2-Dichloroethyler	ne		86.2		%		70-130	10-MAY-19
Dichloromethane			89.1		%		60-140	10-MAY-19
1,2-Dichloropropane			88.2		%		70-130	10-MAY-19
cis-1,3-Dichloropropylene	е		87.4		%		70-130	10-MAY-19
trans-1,3-Dichloropropyle	ene		83.7		%		70-130	10-MAY-19
1,1,1,2-Tetrachloroethan	е		99.0		%		70-130	10-MAY-19
1,1,2,2-Tetrachloroethan	е		101.8		%		70-130	10-MAY-19
Tetrachloroethylene			97.5		%		70-130	10-MAY-19
1,1,1-Trichloroethane			105.7		%		70-130	10-MAY-19
1,1,2-Trichloroethane			87.9		%		70-130	10-MAY-19
Trichloroethylene			86.0		%		70-130	10-MAY-19
Trichlorofluoromethane			108.6		%		60-140	10-MAY-19
Vinyl Chloride			101.2		%		60-140	10-MAY-19
WG3044480-1 MB								
Bromodichloromethane			<0.0010		mg/L		0.001	10-MAY-19
Bromoform			<0.0010		mg/L		0.001	10-MAY-19
Carbon Tetrachloride			<0.00050)	mg/L		0.0005	10-MAY-19
Chlorobenzene			<0.0010		mg/L		0.001	10-MAY-19
Dibromochloromethane			<0.0010		mg/L		0.001	10-MAY-19
Chloroethane			<0.0010		mg/L		0.001	10-MAY-19
Chloroform			<0.0010		mg/L		0.001	10-MAY-19
Chloromethane			<0.0050		mg/L		0.005	10-MAY-19
1,2-Dichlorobenzene			<0.00050)	mg/L		0.0005	10-MAY-19



Workorder: L2267312 Report Date: 05-JUN-19 Page 18 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R46201	19							
WG3044480-1 ME 1,3-Dichlorobenzene			<0.0010		mg/L		0.001	10 MAY 10
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	10-MAY-19 10-MAY-19
1,1-Dichloroethane	•		<0.0010		mg/L		0.001	10-MAY-19 10-MAY-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	10-MAY-19 10-MAY-19
1,1-Dichloroethylene			<0.0010		mg/L		0.001	
cis-1,2-Dichloroethyl			<0.0010		mg/L		0.001	10-MAY-19
trans-1,2-Dichloroeth			<0.0010		mg/L		0.001	10-MAY-19
Dichloromethane	iyierie		<0.0010		mg/L		0.001	10-MAY-19
1,2-Dichloropropane			<0.0010		mg/L		0.003	10-MAY-19 10-MAY-19
cis-1,3-Dichloroprop			<0.0010		mg/L		0.0005	
trans-1,3-Dichloropro			<0.00050		mg/L		0.0005	10-MAY-19
1,1,1,2-Tetrachloroe	• •		<0.00030		mg/L		0.0003	10-MAY-19
1,1,2,2-Tetrachloroe			<0.0010		mg/L		0.001	10-MAY-19
Tetrachloroethylene	ulaile		<0.0010		mg/L		0.0002	10-MAY-19
1,1,1-Trichloroethan	2		<0.0010		•		0.001	10-MAY-19 10-MAY-19
1,1,2-Trichloroethan			<0.0010		mg/L mg/L		0.0005	
Trichloroethylene	5		<0.00030		mg/L		0.0003	10-MAY-19
Trichlorofluorometha	uno.		<0.0010		mg/L		0.001	10-MAY-19
	ine				<u> </u>		0.001	10-MAY-19
Vinyl Chloride			<0.00040		mg/L		0.0004	10-MAY-19
VOC7-HSMS-VA	Water							
Batch R46201	_							
WG3044480-3 DU Benzene	Р	L2267314-5 < 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Methyl t-butyl ether (MTBE)	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Styrene	= =,	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
Toluene		0.00114	0.00092	THE TWO	mg/L	21	30	10-MAY-19
meta- & para-Xylene	•	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
ortho-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-19
WG3044480-2 LC	9	~0.0000	40.00000	ULD-INY	mg/ =	IN/A	30	10-WA1-19
Benzene	J		86.9		%		70-130	10-MAY-19
Ethylbenzene			116.1		%		70-130	10-MAY-19
Methyl t-butyl ether (MTBE)		102.6		%		70-130	10-MAY-19
Styrene			88.2		%		70-130	10-MAY-19
-								-



Workorder: L2267312 Report Date: 05-JUN-19 Page 19 of 21

Client: GHD Limited

10271 Shellbridge Way Richmond, BC V6X 2W8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
	20119 LCS							
Toluene	LOS		84.3		%		70-130	10-MAY-19
meta- & para-Xyle	ene		101.9		%		70-130	10-MAY-19
ortho-Xylene			95.5		%		70-130	10-MAY-19
WG3044480-1 Benzene	МВ		<0.00050		mg/L		0.0005	10-MAY-19
Ethylbenzene			<0.00050		mg/L		0.0005	10-MAY-19
Methyl t-butyl ethe	er (MTBE)		<0.00050		mg/L		0.0005	10-MAY-19
Styrene			<0.00050		mg/L		0.0005	10-MAY-19
Toluene			<0.00045		mg/L		0.00045	10-MAY-19
meta- & para-Xyle	ene		<0.00050		mg/L		0.0005	10-MAY-19
ortho-Xylene			<0.00050		mg/L		0.0005	10-MAY-19

Workorder: L2267312 Report Date: 05-JUN-19

GHD Limited Client: Page 20 of 21

10271 Shellbridge Way

Richmond, BC V6X 2W8

Contact: Airesse MacPhee

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
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
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.

Workorder: L2267312 Report Date: 05-JUN-19

GHD Limited Client:

> 10271 Shellbridge Way Richmond, BC V6X 2W8

Contact: Airesse MacPhee

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	01-MAY-19 15:30	07-MAY-19 10:59	0.25	139	hours	EHTR-FM
	2	01-MAY-19 15:45	07-MAY-19 10:59	0.25	139	hours	EHTR-FM
	3	01-MAY-19 16:45	07-MAY-19 10:59	0.25	138	hours	EHTR-FM
	4	01-MAY-19 16:50	07-MAY-19 10:59	0.25	138	hours	EHTR-FM
	5	01-MAY-19 17:30	07-MAY-19 10:59	0.25	138	hours	EHTR-FM
	6	01-MAY-19 17:40	07-MAY-19 10:59	0.25	137	hours	EHTR-FM
	7	01-MAY-19 18:00	07-MAY-19 10:59	0.25	137	hours	EHTR-FM
	8	01-MAY-19 18:30	07-MAY-19 10:59	0.25	137	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2267312 were received on 03-MAY-19 10:00.

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 predetermined 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.

Page 21 of 21

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2267312-COFC

			_	_									

COCIN	annoen.	U	-

	www.alsglopal.com			!							l	4						
Report To	Contact and company name below will appear on the final report		Report Format	Distribution	<u></u> .	Select a	el vide c	evel De	NW - Free	ase conf	imı all E	&P TAT	s with y	our AM - s	surcharges	will apply	,	
Company:	GHD Limited	Select Report F	ormat: 🗹 PDF 🛭	EXCEL I EDD	(DIGITAL)		Re	gular	[R]	Stan	dard TA	AT if rec	ceived t	у 3 pm -	- business	Jays - no	surchar	ges apply
Contact:	Äiresse MacPhee	Quality Control	(QC) Report with Re	eport ☑ YES	□ NO	Y Says}	4	day [f	4] /			Ç	1	Busine	ess day	(E1)		
Phone:		Compare Result	s to Criteria on Report - _I	provide details below	If box checked	IORITY ress Da	3	day [F	23]			RGEN	s	ame D	ay, Wee	kend c	эr	_
	Company address below will appear on the final report	Select Distributi	ion: 🛛 EMAIL	☐ MAIL ☐ FA	ax	PR (Bush	2	day [F	2]			EME	1		ory holic			
Street:	651 Colby Drive	Email 1 or Fax	airesse.macphee@	ghd.com			Date ar	nd Time	Requi	ed for a	all E&P	TATs:	;		đđ-	mmm-y	y hhim	ידור
City/Province:	Waterloo, ON	Email 2	See PO			For test	is that ca	an not b	e perforn	red acco	rding to	the ser	vice lev	al selecte	d, you will b	e contací	ted.	
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LSD:	Campbell River (Phase 02) GW & Schedule B	Location:				ated	:	SQ4,	j				4					Number of Containers
ALS Lab Wor	rk Order # (lab use only)	ALS Contact:	lasmeen	Sampler:	Fick	(speciated)	N-F	(CI, F, S		vit.		(w/ Hg,Ph	2	-	*			Ž
ALC Complet	Sample Identification and/or Coordinates		Date	Time	1 1 001 1	Alkalinity	Ammonia-N			Conductivity		MET-DIS						
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Drinking	Water (DW) Samples ¹ (client use)	-	etronic COC only)	king on the grop t	omi noi beloti	Froze	en e							vations		_	No	
Are samples tak	en from a Regulated DW System?	1 1 3	11.00	0 - 1	7	4	acks .	П	Ice C	Cubes	П				ict Yes	, 🗖	No	┌
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REFER TO BACK	WAGE FOR ALS'LOCATIONS AND SAMPLING INFORMATION		WHI	TE - LABORATOR	Y COPY YELL	OW.	CLIENT	エムロラ	Υ						- 1			OCTOBER 2015 FROM



GHD Field Sample Key (FSK)

Site Campbell River (056484-52)

Sample Reason Q2 2019 EMP

Sampler Name M. Dyck & C. Thorne

Sampling Company GHD Ltd.

Laboratory(s) ALS Environmental

SSOW Reference Code :

Laboratory(s)	ALS	Environmental		<u>.</u>				_	Tempe	erature	рН	Eh /	ORP	Cond	uctivity	Turb	idity	D	0	TC	os
Sample ID	Location	Sample Date (mm/dd/yyyy)	Sample Time (hh:mm)	Sample Type	Sample Matrix	Grab or Composite	Parent Sample ID for Field Dups	Volume of Water Purged (L)	Sample Temperature	Temperature Units	Field pH (s.u.)	Eh / ORP	Eh / ORP Units	Conductivity	Conductivity Units	Turbidity	Turbidity Units	Dissolved Oxygen	Dissolved Oxygen Units	Total Dissolved Solids	Total Dissolved Solids Units
GROUNDWATER		T		ı					1				ı	1							
WG-56484-250619-CT-07	MW01-16	06/25/2019	10:45	N	WG	Grab		36	9.64	С	6.76	291	mV	45	uS/cm	30.9	ntu	-	mg/L	0.029	g/L
WG-56484-250619-CT-08	MW03-18	06/25/2019	12:00	N	WG	Grab		41.6	12.86	С	7.94	252	mV	106	uS/cm	4.0	ntu	-	mg/L	0.069	g/L
WG-56484-250619-CT-09	MW03-18	06/25/2019	12:30	FD	WG	Grab	WG-56484-250619-CT-08	41.6	12.86	С	7.94	252	mV	106	uS/cm	4.0	ntu	-	mg/L	0.069	g/L
WG-56484-250619-CT-10	AG99-05	06/25/2019	12:45	N	WG	Grab		180	13.22	С	8.18	175	mV	141	uS/cm	1.5	ntu	-	mg/L	0.091	g/L
WG-56484-250619-CT-11	AG99-04	06/25/2019	15:30	N	WG	Grab		132	13.60	С	8.29	191	mV	71	uS/cm	0.0	ntu	-	mg/L	0.046	g/L
WG-56484-250619-CT-12	EBA11-3	06/25/2019	16:30	N	WG	Grab		51	11.45	С	8.45	193	mV	110	uS/cm	16.6	ntu	-	mg/L	0.072	g/L
WG-56484-250619-CT-13	EBA11-3	06/25/2019	16:35	FD	WG	Grab	WG-56484-250619-CT-12	51	11.45	С	8.45	193	mV	110	uS/cm	16.6	ntu	-	mg/L	0.072	g/L
WG-56484-250619-CT-14	EBA11-4	06/25/2019	17:00	N	WG	Grab		42	11.00	С	8.82	178	mV	87	uS/cm	88.5	ntu	-	mg/L	0.056	g/L
WG-56484-250619-CT-15	AG99-06	06/25/2019	17:45	N	WG	Grab		21	10.73	С	8.18	189	mV	150	uS/cm	145	ntu	-	mg/L	0.097	g/L
WG-56484-250619-CT-16	EBA04-6	06/25/2019	18:30	N	WG	Grab		90	11.95	С	7.37	176	mV	474	uS/cm	1.0	ntu	-	mg/L	0.309	g/L
WG-56484-250619-CT-17	EBA04-7	06/25/2019	19:00	N	WG	Grab		56	11.18	С	7.19	198	mV	600	uS/cm	2.7	ntu	-	mg/L	0.384	g/L
WG-56484-260619-CT-18	HBT94-1	06/26/2019	10:15	N	WG	Grab		12	13.58	С	7.19	37	mV	438	uS/cm	28.6	ntu	-	mg/L	0.285	g/L
WG-56484-260619-CT-19	HBT94-2	06/26/2019	10:20	N	WG	Grab		112	12.43	С	7.72	-32	mV	297	uS/cm	7.4	ntu	-	mg/L	0.193	g/L
WG-56484-260619-CT-20	EBA11-2	06/26/2019	11:00	N	WG	Grab		51	11.39	С	7.88	177	mV	175	uS/cm	104	ntu	-	mg/L	0.114	g/L
WG-56484-260619-CT-21	EBA04-1	06/26/2019	12:05	N	WG	Grab		-	18.66	С	8.63	197	mV	64	uS/cm	1.4	ntu		mg/L	0.041	g/L
WG-56484-260619-CT-22	Field Blank	06/26/2019	12:20	FB	WG	Grab		-	-	С	-	-	mV	-	uS/cm	-	ntu	-	mg/L	-	g/L
WG-56484-260619-CT-23	MW02-18	06/26/2019	14:00	N	WG	Grab		74	13.95	С	7.13	93	mV	411	uS/cm	0.0	ntu	-	mg/L	0.270	g/L
WG-56484-260619-CT-24	AG99-02	06/26/2019	15:00	N	WG	Grab		135	13.09	С	8.44	189	mV	103	uS/cm	0.0	ntu	-	mg/L	0.067	g/L
WG-56484-260619-CT-25	AG99-01	06/26/2019	16:30	N	WG	Grab		111	14:34	С	7.99	215	mV	165	uS/cm	4.1	ntu	-	mg/L	0.107	g/L
WG-56484-260619-CT-26	EBA11-1	06/26/2019	17:00	N	WG	Grab		42	11.36	С	7.78	235	mV	220	uS/cm	26.7	ntu	-	mg/L	0.144	g/L
SURFACE WATER																					
WS-56484-250619-CT-01	SW03-17	06/25/2019	13:00	N	WS	Grab		-	23.61	С	8.68	201	mV	22	uS/cm	9.7	ntu	4.69	mg/L	0.015	g/L





GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 27-JUN-19

Report Date: 08-JUL-19 17:04 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2300113Project P.O. #: 73515713

Job Reference: 056484-52

C of C Numbers: 17-WG-56484-250619

Legal Site Desc:

Comments: NO2 + NO3 included as requested.

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
2300113-1 WG-56484-250619-CT-07 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 10:45 Matrix: WG							
Physical Tests							
Conductivity	66.7		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	29.6		0.50	mg/L		28-JUN-19	
рН	7.79		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	57		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	30.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	30.0		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	0.82		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.0279		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.0279		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	< 0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.34		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (AI)-Dissolved	0.0022		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00176		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	< 0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	9.51		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	1.43		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000131		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.124		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-1 WG-56484-250619-CT-07 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 10:45 Matrix: WG	,						
Dissolved Metals							
Selenium (Se)-Dissolved	0.000081		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	3.31		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	0.870		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0141		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.69		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00099		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-2 WG-56484-250619-CT-08 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:00 Matrix: WG)						
Physical Tests							
Conductivity	151		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	66.3		0.50	mg/L		28-JUN-19	
pH	8.21		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	98		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	71.4		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	71.4		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	1.59		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.237		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.237		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.68		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (AI)-Dissolved	0.0055		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00056		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00203		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-2 WG-56484-250619-CT-08							
Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:0 WG	0						
Dissolved Metals							
Boron (B)-Dissolved	0.020		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	23.3		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00033		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	1.97		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000177		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.582		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000142		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.40		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	2.70		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0404		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.86		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000047		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00254		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-3 WG-56484-250619-CT-09 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:0 Matrix: WG	5						
Physical Tests							
Conductivity	150		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	65.6		0.50	mg/L		28-JUN-19	
pH	8.21		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	98		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	71.7		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L			R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	71.7		1.0	mg/L		28-JUN-19	R4691065

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-3 WG-56484-250619-CT-09 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:0 Matrix: WG	5						
Anions and Nutrients							
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	1.58		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.228		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.228		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.68		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0051		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00055		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00226		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	0.018		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	23.0		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00031		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00046		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	1.98		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	< 0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000191		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	< 0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	< 0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.587		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000159		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.43		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	2.76		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0416		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.80		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	< 0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-3 WG-56484-250619-CT-09 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:05 Matrix: WG	5						
Dissolved Metals							
Uranium (U)-Dissolved	0.000049		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00259		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-4 WG-56484-250619-CT-10 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:45 Matrix: WG			0.00020				
Physical Tests							
Conductivity	200		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	90.8		0.50	mg/L		28-JUN-19	
pH	8.32		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	129		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	91.7		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	4.4		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	96.1		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	3.65		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.0676		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.0676		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.56		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0036		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00038		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00134		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	0.018		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	30.7		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00024		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00090		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-4 WG-56484-250619-CT-10 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 12:45 Matrix: WG	;						
Dissolved Metals							
Magnesium (Mg)-Dissolved	3.46		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000100		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.501		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000076		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.42		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	1.91		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0498		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.72		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000081		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00282		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-5 WG-56484-250619-CT-11 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 15:30 WG							
Physical Tests							
Conductivity	101		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	46.1		0.50	mg/L		28-JUN-19	
рН	8.04		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids Anions and Nutrients	71		13	mg/L		30-JUN-19	R4691756
Alkalinity, Bicarbonate (as CaCO3)	47.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	47.0		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	1.19		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.0991		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.0991		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.41		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700

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

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Aluminum (Al)-Dissolved	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Matrix WG Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Filtration Location FIELD Aluminum (AI)-Dissolved 0.0050 0.00010 mg/L 27-JUN-19 28-JUN-19 R468 Arsenic (As)-Dissolved 0.00044 0.00010 mg/L 27-JUN-19 28-JUN-19 R468 Arsenic (As)-Dissolved 0.00066 0.00010 mg/L 27-JUN-19 28-JUN-19 R468 R469 R	L2300113-5 WG-56484-250619-CT-11							
Dissolved Metals Dissolved Metals FIELD Dissolved Metals FIELD Dissolved Metals Dissolved 0.0060 0.0060 0.00010 mg/L 27-JUN-19 28-JUN-19 R489 Antimorry (Sb)-Dissolved 0.000010 0.000110 mg/L 27-JUN-19 28-JUN-19 R489 R488 R47-JUN-19 28-JUN-19 R489 R489 R499)						
Dissolved Metals Filtration Location								
Aluminum (Al)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Antimory (Sib)-Dissolved Berlium (Ba)-Dissolved Berlium (Ba)-Dissolved Antimory (Sib)-Dissolved Berlium (Ba)-Dissolved Antimory (Sib)-Dissolved Ant		EIEL D					27 11 10 10	D 4600764
Antimorry (Sb)-Dissolved Arsenic (As)-Dissolved Antimorry (Sb)-Dissolved Antimorry (Sb)-Dissolved Antimorry (Sb)-Dissolved Antimorry (Sb)-Dissolved Dissolve				0.0010	ma/l	27 ILIN 10		R4689761
Arsenic (As)-Dissolved Barlum (Ba)-Dissolved 0,00066 0,00010 0	, ,							R4690172
Banium (Ba)-Dissolved					_			R4690172
Beryllium (Be)-Dissolved	` '							R4690172
Bismuth (Bi)-Dissolved	, ,				_			R4690172
Boron (B)-Dissolved					_			R4690172
Cadmium (Cd)-Dissolved								R4690172
Calcium (Ca)-Dissolved								R4690172
Chromium (Cr)-Dissolved	, ,				_			R4690172
Cobalt (Co)-Dissolved	, ,							R4690172
Copper (Cu)-Dissolved	, ,							R4690172
Iron (Fe)-Dissolved	, ,							R4690172
Lead (Pb)-Dissolved								R4690172
Lithium (Li)-Dissolved								R4690172
Magnesium (Mg)-Dissolved 1.60 0.0050 mg/L 27-JUN-19 28-JUN-19 R469 Manganese (Mn)-Dissolved <0.00010								R4690172
Manganese (Mn)-Dissolved <0.00010						27-JUN-19		R4690172
Mercury (Hg)-Dissolved <0.0000050 0.0000050 mg/L 02-JUL-19 02-JUL-19 R469 Molybdenum (Mo)-Dissolved 0.000123 0.000050 mg/L 27-JUN-19 28-JUN-19 R469 Nickel (Ni)-Dissolved <0.00050		<0.00010				27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	Mercury (Hg)-Dissolved	<0.000050		0.0000050		02-JUL-19	02-JUL-19	R4692176
Phosphorus (P)-Dissolved C.0.550 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Potassium (K)-Dissolved 0.283 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Selenium (Se)-Dissolved 0.000087 0.000050 mg/L 27-JUN-19 28-JUN-19 R469 Silicon (Si)-Dissolved 4.01 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.000010 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Sodium (Na)-Dissolved 1.25 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Strontium (Sr)-Dissolved 0.0248 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Sulfur (S)-Dissolved 0.74 0.50 mg/L 27-JUN-19 28-JUN-19 R469 Tin (Sn)-Dissolved 0.00010 0.00010 mg/L 27-JUN-19 28-JUN-19 R469 Tin (Sn)-Dissolved <a hre<="" td=""><td>Molybdenum (Mo)-Dissolved</td><td>0.000123</td><td></td><td>0.000050</td><td>•</td><td>27-JUN-19</td><td>28-JUN-19</td><td>R4690172</td>	Molybdenum (Mo)-Dissolved	0.000123		0.000050	•	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved 0.283 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Selenium (Se)-Dissolved 0.000087 0.000050 mg/L 27-JUN-19 28-JUN-19 R469 Selenium (Se)-Dissolved 0.000087 0.000050 mg/L 27-JUN-19 28-JUN-19 R469 Selenium (Se)-Dissolved 4.01 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 4.01 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 4.01 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.0248 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.0248 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00010 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.000010 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved 0.00020 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 Silver (Ag)-Dissolved 0.00020 0.00020 Silver (Ag)-Dissolved 0.00020 Silver (Ag)-Dissolved 0.00020 Silver (Ag)-Dissolved 0.0002		<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved 0.000087 0.000050 mg/L 27-JUN-19 28-JUN-19 R469 Silicon (Si)-Dissolved 4.01 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved <0.000010	Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved 4.01 0.050 mg/L 27-JUN-19 28-JUN-19 R469 Silver (Ag)-Dissolved <0.000010	Potassium (K)-Dissolved	0.283		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved <0.000010	Selenium (Se)-Dissolved	0.000087		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved 1.25 0.050 mg/L 27-JUN-19 28-JUN-19 R469	Silicon (Si)-Dissolved	4.01		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved 0.0248 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 Sulfur (S)-Dissolved 0.74 0.50 mg/L 27-JUN-19 28-JUN-19 R469 Thallium (TI)-Dissolved <0.000010	Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved 0.74 0.50 mg/L 27-JUN-19 28-JUN-19 R469 Thallium (TI)-Dissolved <0.000010	Sodium (Na)-Dissolved	1.25		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	Strontium (Sr)-Dissolved	0.0248		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	Sulfur (S)-Dissolved	0.74		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved 0.000025 0.000010 mg/L 27-JUN-19 28-JUN-19 R469 Vanadium (V)-Dissolved 0.00324 0.00050 mg/L 27-JUN-19 28-JUN-19 R469 Zinc (Zn)-Dissolved <0.0010	Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved 0.00324 0.00050 mg/L 27-JUN-19 28-JUN-19 R469 Zinc (Zn)-Dissolved <0.0010	Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved <0.0010	Uranium (U)-Dissolved	0.000025		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved <0.00020 0.00020 mg/L 27-JUN-19 28-JUN-19 R469 L2300113-6 WG-56484-250619-CT-12 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30 Matrix: WG Physical Tests Conductivity 159 2.0 uS/cm 28-JUN-19 R469	Vanadium (V)-Dissolved	0.00324		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-6 WG-56484-250619-CT-12 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30 Matrix: WG Physical Tests Conductivity 159 2.0 uS/cm 28-JUN-19 R469	Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30 Matrix: WG Physical Tests Conductivity 159 2.0 uS/cm 28-JUN-19 R469	Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Conductivity 159 2.0 uS/cm 28-JUN-19 R469	Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30)						
	Physical Tests							
	Conductivity	159		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3) 63.0 0.50 mg/L 28-JUN-19	Hardness (as CaCO3)	63.0		0.50	mg/L		28-JUN-19	

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-6 WG-56484-250619-CT-12 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30 Matrix: WG	1						
Physical Tests							
pH	7.99		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	128		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	45.9		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	45.9		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	17.8		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.113		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.113		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.22		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0013		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00072		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	< 0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	19.9		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00033		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	3.22		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000121		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	< 0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.298		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000097		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.63		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-6 WG-56484-250619-CT-12 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:30 Matrix: WG)						
Dissolved Metals							
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	1.68		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0357		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.64		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000030		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00331		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-7 WG-56484-250619-CT-13 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:39 Matrix: WG			0.00020	g/ _	27 0011 10	23 3311 13	114030172
Physical Tests							
Conductivity	159		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	66.0		0.50	mg/L		28-JUN-19	
pH	7.99		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	121		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	45.5		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	45.5		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	17.7		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.113		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.113		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.21		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals				Ü			
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (AI)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00074		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-7 WG-56484-250619-CT-13 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 16:3 Matrix: WG	5						
Dissolved Metals							
Calcium (Ca)-Dissolved	20.9		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00031		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	3.35		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000134		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.304		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000137		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.52		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	1.73		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0365		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.70		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000029		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00338		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-8 WG-56484-250619-CT-14 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 17:0 WG	0						
Physical Tests							
Conductivity	123		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	50.3		0.50	mg/L		28-JUN-19	
рН	8.04		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	89		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	50.1		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	50.1		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	5.65		0.50	mg/L		29-JUN-19	R4692125

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-8 WG-56484-250619-CT-14 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 17:0 Matrix: WG	0						
Anions and Nutrients							
Fluoride (F)	0.022		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.164		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.164		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	1.88		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (AI)-Dissolved	0.0050		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00188		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00128		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	15.6		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00153		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	2.79		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000094		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.843		0.050	mg/L	27-JUN-19 27-JUN-19	28-JUN-19 28-JUN-19	R4690172
Silicon (Si)-Dissolved	0.000244		0.000050	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	6.02		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	<0.000010 2.70		0.000010 0.050	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0297		0.00020	mg/L mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Submum (Sr)-Dissolved Sulfur (S)-Dissolved	0.0297		0.00020	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172 R4690172
Thallium (TI)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19 27-JUN-19	28-JUN-19 28-JUN-19	R4690172
Uranium (U)-Dissolved	0.00030		0.00030	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.000260		0.00050	mg/L	27-JUN-19 27-JUN-19	28-JUN-19	R4690172
- 3.1331111 (1) 2.13301100	0.0102		0.00000	9/ =	2. 3314-13	20 0011-19	11-1000112

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-8 WG-56484-250619-CT-14 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 17:00 Matrix: WG							
Dissolved Metals							
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-9 WG-56484-250619-CT-15 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 17:45 Matrix: WG				•			
Physical Tests							
Conductivity	216		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	96.1		0.50	mg/L		28-JUN-19	
рН	8.21		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	142		13	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	93.1		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	93.1		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	9.14		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	0.022		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.377		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	0.377		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.25		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0123		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00086		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	0.0000085		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	30.0		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00081		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00038		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	0.014		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	5.14		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	0.00124		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-9 WG-56484-250619-CT-15 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 17:45 Matrix: WG	5						
Dissolved Metals							
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000080		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.356		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	0.000150		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	4.85		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	3.17		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.0765		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	0.63		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	0.00051		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000145		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00300		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-10 WG-56484-250619-CT-16 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 18:30 Matrix: WG)						
Physical Tests							
Conductivity	619		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	335		0.50	mg/L		28-JUN-19	
pH	8.14		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	411		20	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	335		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	335		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	6.65		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	2.40		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	2.40		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	0.0028		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	6.22		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals	E1E1 B					00 "" 10	D 4004=33
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD		0.0515		07 11 11 16	27-JUN-19	R4689761
Aluminum (AI)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-10 WG-56484-250619-CT-16 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 18:3 WG	0						
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00838		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	0.035		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	0.0000149		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	99.5		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	0.00104		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00034		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	20.9		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	0.00013		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	1.48		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	12.0		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	7.24		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.217		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Sulfur (S)-Dissolved	2.10		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000322		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00155		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
L2300113-11 WG-56484-250619-CT-17 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 19:0 WG	0						
Physical Tests							
Conductivity	832		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	385		0.50	mg/L		29-JUN-19	
рН	7.99		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	533		20	mg/L		30-JUN-19	R4691756

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-11 WG-56484-250619-CT-17 Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 19:0 Matrix: WG	0						
Physical Tests							
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	366		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	366		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	53.6		2.5	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.10	DLDS	0.10	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	1.15		0.025	mg/L		02-JUL-19	
Nitrate (as N)	1.15		0.025	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	15.3		1.5	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0114		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.0160		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	0.199		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	0.0000374		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	111		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	0.00035		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00243		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	0.013		0.010	mg/L	27-JUN-19	29-JUN-19	R4690674
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	26.2		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	0.116		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	0.000095		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	0.00105		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	2.23		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	12.6		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	24.4		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300113-11 WG-56484-250619-CT-17							
Sampled By: M. Dyke/C. Thorne on 25-JUN-19 @ 19:0	О						
Matrix: WG							
Dissolved Metals				_			
Strontium (Sr)-Dissolved	0.286		0.00020	mg/L	27-JUN-19		R4690172
Sulfur (S)-Dissolved	5.63		0.50	mg/L	27-JUN-19		R4690172
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19		R4690172
Titanium (Ti)-Dissolved	<0.00090	DLM	0.00090	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	0.000825		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	0.00169		0.00050	mg/L	27-JUN-19		R4690172
Zinc (Zn)-Dissolved	0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
* Peter to Referenced Information for Qualifiers (if any) and							

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2300113-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2300113-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2300113-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2300113-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9

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).
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-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Cabrulation Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where negligible during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), pleaseled with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using proceding in the filtrength of

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

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Reference Information

Version: FINAL

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 VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

17-WG-56484-250619

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.



Workorder: L2300113 Report Date: 08-JUL-19 Page 1 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R4 WG3090803-3 Alkalinity, Total	691065 CRM (as CaCO3)	VA-ALK-TITR	-CONTROL 103.1		%		85-115	28-JUN-19
WG3090823-3 Alkalinity, Total	CRM (as CaCO3)	VA-ALK-TITR	-CONTROL 101.5		%		85-115	28-JUN-19
WG3090803-5 Alkalinity, Total	DUP (as CaCO3)	L2299598-2 255	254		mg/L	0.5	20	28-JUN-19
WG3090803-1 Alkalinity, Total	MB (as CaCO3)		<1.0		mg/L		1	28-JUN-19
WG3090823-1 Alkalinity, Total	MB (as CaCO3)		<1.0		mg/L		1	28-JUN-19
CL-IC-N-VA	Water							
Batch R4 WG3090902-3 Chloride (CI)	692125 DUP	L2298732-1 425	450		mg/L	5.7	20	29-JUN-19
WG3090902-2 Chloride (CI)	LCS		94.9		%		90-110	29-JUN-19
WG3090902-1 Chloride (CI)	МВ		<0.50		mg/L		0.5	29-JUN-19
WG3090902-4 Chloride (CI)	MS	L2298732-3	98.7		%		75-125	29-JUN-19
EC-PCT-VA	Water							
Batch R4691065								
WG3090803-4 Conductivity	CRM	VA-EC-PCT-C	103.7		%		90-110	28-JUN-19
WG3090823-4 Conductivity	CRM	VA-EC-PCT-C	103.3		%		90-110	28-JUN-19
WG3090803-5 Conductivity	DUP	L2299598-2 441	436		uS/cm	1.1	10	28-JUN-19
WG3090803-1 Conductivity	МВ		<2.0		uS/cm		2	28-JUN-19
WG3090823-1 Conductivity	МВ		<2.0		uS/cm		2	28-JUN-19
F-IC-N-VA	Water							
Batch R4	692125							
WG3090902-3 Fluoride (F)	DUP	L2298732-1 <0.40	<0.40	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3090902-2	LCS							



Workorder: L2300113 Report Date: 08-JUL-19 Page 2 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-VA	Water							
Batch R4692125								
WG3090902-2 LCS Fluoride (F)			94.7		%		90-110	29-JUN-19
WG3090902-1 MB Fluoride (F)			<0.020		mg/L		0.02	29-JUN-19
WG3090902-4 MS Fluoride (F)		L2298732-3	99.4		%		75-125	29-JUN-19
HG-D-CVAA-VA	Water							
Batch R4692176								
WG3093169-3 DUP Mercury (Hg)-Dissolved		L2300035-1 < 0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093169-7 DUP Mercury (Hg)-Dissolved		L2300185-1 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093169-2 LCS								
Mercury (Hg)-Dissolved			102.4		%		80-120	02-JUL-19
WG3093169-6 LCS Mercury (Hg)-Dissolved			102.3		%		80-120	02-JUL-19
WG3093169-1 MB Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	02-JUL-19
WG3093169-5 MB Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	02-JUL-19
WG3093169-4 MS		L2298732-1						
Mercury (Hg)-Dissolved			89.9		%		70-130	02-JUL-19
WG3093169-8 MS Mercury (Hg)-Dissolved		L2300116-1	97.9		%		70-130	02-JUL-19
MET-D-CCMS-VA	Water							
Batch R4690172								
WG3090822-3 DUP Aluminum (Al)-Dissolved	d	L2300113-1 0.0022	0.0027		mg/L	20	20	28-JUN-19
Antimony (Sb)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Barium (Ba)-Dissolved		0.00176	0.00174		mg/L	1.1	20	28-JUN-19
Beryllium (Be)-Dissolved	t	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JUN-19
Cadmium (Cd)-Dissolve	d	<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Calcium (Ca)-Dissolved		9.51	9.51		mg/L	0.1	20	28-JUN-19



Workorder: L2300113 Report Date: 08-JUL-19 Page 3 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R469	0172							
WG3090822-3 I Chromium (Cr)-Di	DUP ssolved	L2300113-1 0.00014	0.00014		mg/L	0.2	20	28-JUN-19
Cobalt (Co)-Disso	lved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Copper (Cu)-Disso	olved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	28-JUN-19
Iron (Fe)-Dissolve	d	<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JUN-19
Lead (Pb)-Dissolv	ed	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Lithium (Li)-Dissol	ved	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-JUN-19
Magnesium (Mg)-	Dissolved	1.43	1.44		mg/L	0.9	20	28-JUN-19
Manganese (Mn)-	Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Molybdenum (Mo)	-Dissolved	0.000131	0.000137		mg/L	4.4	20	28-JUN-19
Nickel (Ni)-Dissolv	/ed	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JUN-19
Phosphorus (P)-D	issolved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-JUN-19
Potassium (K)-Dis	solved	0.124	0.128		mg/L	3.5	20	28-JUN-19
Selenium (Se)-Dis	ssolved	0.000081	0.000068		mg/L	17	20	28-JUN-19
Silicon (Si)-Dissol	ved	3.31	3.29		mg/L	0.5	20	28-JUN-19
Silver (Ag)-Dissolv	/ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Sodium (Na)-Diss	olved	0.870	0.877		mg/L	0.8	20	28-JUN-19
Strontium (Sr)-Dis	solved	0.0141	0.0143		mg/L	1.3	20	28-JUN-19
Sulfur (S)-Dissolve	ed	0.69	0.64		mg/L	7.5	20	28-JUN-19
Thallium (TI)-Diss	olved	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Tin (Sn)-Dissolved	t	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Titanium (Ti)-Diss	olved	<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-JUN-19
Uranium (U)-Disso	olved	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Vanadium (V)-Dis	solved	0.00099	0.00099		mg/L	0.4	20	28-JUN-19
Zinc (Zn)-Dissolve	ed	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-JUN-19
Zirconium (Zr)-Dis	ssolved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	28-JUN-19
WG3090822-2 L			404.0		0/			
Aluminum (Al)-Dis			101.9		%		80-120	28-JUN-19
Antimony (Sb)-Dis			105.0		%		80-120	28-JUN-19
Arsenic (As)-Disso			97.5		%		80-120	28-JUN-19
Barium (Ba)-Disso			101.5		%		80-120	28-JUN-19
Beryllium (Be)-Dis			94.4		%		80-120	28-JUN-19
Bismuth (Bi)-Disso			96.7		%		80-120	28-JUN-19
Boron (B)-Dissolve	₽u		88.9		%		80-120	28-JUN-19



Workorder: L2300113 Report Date: 08-JUL-19 Page 4 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R46901	72							
WG3090822-2 LC Cadmium (Cd)-Disso			97.4		%		00.400	00 10
Calcium (Ca)-Dissol			97.4		%		80-120	28-JUN-19
			93.2		%		80-120	28-JUN-19
Chromium (Cr)-Disso			99.2 97.6		%		80-120	28-JUN-19
Copper (Cu) Dissolve			97.6		%		80-120	28-JUN-19
Copper (Cu)-Dissolv Iron (Fe)-Dissolved	eu		95.3		%		80-120	28-JUN-19
` '					%		80-120	28-JUN-19
Lead (Pb)-Dissolved Lithium (Li)-Dissolve			95.4 94.1		%		80-120	28-JUN-19
` ,			94.1		%		80-120	28-JUN-19
Magnesium (Mg)-Dis Manganese (Mn)-Dis			99.5		%		80-120	28-JUN-19
, ,					%		80-120	28-JUN-19
Molybdenum (Mo)-D			92.9		%		80-120	28-JUN-19
Nickel (Ni)-Dissolved			96.8		%		80-120	28-JUN-19
Phosphorus (P)-Diss Potassium (K)-Disso			105.0 100.5		%		70-130	28-JUN-19
Selenium (Se)-Disso			98.1		%		80-120	28-JUN-19
Silicon (Si)-Dissolved			108.7		%		80-120	28-JUN-19
Silver (Ag)-Dissolved			99.3		%		60-140	28-JUN-19
			99.3 99.4		%		80-120	28-JUN-19
Sodium (Na)-Dissolv			99.4 98.9				80-120	28-JUN-19
Strontium (Sr)-Disso	ivea		100.1		%		80-120	28-JUN-19
Sulfur (S)-Dissolved	and				%		80-120	28-JUN-19
Thallium (TI)-Dissolv	eu		94.8		%		80-120	28-JUN-19
Tin (Sn)-Dissolved Titanium (Ti)-Dissolv	rod.		98.8 93.5		%		80-120	28-JUN-19
Uranium (U)-Dissolv			93.5		%		80-120	28-JUN-19
Vanadium (V)-Dissol			99.3		%		80-120	28-JUN-19
Zinc (Zn)-Dissolved	veu		99.5		%		80-120	28-JUN-19
Zirconium (Zr)-Disso	lyod						80-120	28-JUN-19
			93.7		%		80-120	28-JUN-19
WG3090822-1 MB Aluminum (Al)-Disso			<0.0010		mg/L		0.001	28-JUN-19
Antimony (Sb)-Disso			<0.00010)	mg/L		0.0001	28-JUN-19
Arsenic (As)-Dissolv			<0.00010		mg/L		0.0001	28-JUN-19
Barium (Ba)-Dissolve			<0.00010		mg/L		0.0001	28-JUN-19
Beryllium (Be)-Disso	lved		<0.00010		mg/L		0.0001	28-JUN-19
Bismuth (Bi)-Dissolv			<0.00005		mg/L		0.00005	28-JUN-19
, ,					-			· -



Workorder: L2300113 Report Date: 08-JUL-19 Page 5 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4690172							
WG3090822-1 MB		0.040		/I		0.04	
Boron (B)-Dissolved		<0.010		mg/L		0.01	28-JUN-19
Cadmium (Cd)-Dissolved		<0.000005	OC	mg/L		0.000005	28-JUN-19
Calcium (Ca)-Dissolved		<0.050		mg/L		0.05	28-JUN-19
Chromium (Cr)-Dissolved		<0.00010		mg/L		0.0001	28-JUN-19
Cobalt (Co)-Dissolved		<0.00010		mg/L		0.0001	28-JUN-19
Copper (Cu)-Dissolved		<0.00020		mg/L		0.0002	28-JUN-19
Iron (Fe)-Dissolved		<0.010		mg/L		0.01	28-JUN-19
Lead (Pb)-Dissolved		<0.000050)	mg/L		0.00005	28-JUN-19
Lithium (Li)-Dissolved		<0.0010		mg/L		0.001	28-JUN-19
Magnesium (Mg)-Dissolved		<0.0050		mg/L		0.005	28-JUN-19
Manganese (Mn)-Dissolved		<0.00010		mg/L		0.0001	28-JUN-19
Molybdenum (Mo)-Dissolved		<0.000050)	mg/L		0.00005	28-JUN-19
Nickel (Ni)-Dissolved		<0.00050		mg/L		0.0005	28-JUN-19
Phosphorus (P)-Dissolved		<0.050		mg/L		0.05	28-JUN-19
Potassium (K)-Dissolved		<0.050		mg/L		0.05	28-JUN-19
Selenium (Se)-Dissolved		<0.000050)	mg/L		0.00005	28-JUN-19
Silicon (Si)-Dissolved		< 0.050		mg/L		0.05	28-JUN-19
Silver (Ag)-Dissolved		<0.000010)	mg/L		0.00001	28-JUN-19
Sodium (Na)-Dissolved		< 0.050		mg/L		0.05	28-JUN-19
Strontium (Sr)-Dissolved		<0.00020		mg/L		0.0002	28-JUN-19
Sulfur (S)-Dissolved		<0.50		mg/L		0.5	28-JUN-19
Thallium (TI)-Dissolved		<0.000010)	mg/L		0.00001	28-JUN-19
Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	28-JUN-19
Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	28-JUN-19
Uranium (U)-Dissolved		<0.000010)	mg/L		0.00001	28-JUN-19
Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	28-JUN-19
Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	28-JUN-19
Zirconium (Zr)-Dissolved		<0.00020		mg/L		0.0002	28-JUN-19
WG3090822-4 MS Aluminum (Al)-Dissolved	L2300113-2	96.2		%		70-130	28-JUN-19
Antimony (Sb)-Dissolved		101.4		%		70-130	28-JUN-19
Arsenic (As)-Dissolved		95.2		%		70-130	28-JUN-19
Barium (Ba)-Dissolved		97.4		%		70-130	28-JUN-19
Beryllium (Be)-Dissolved		97.8		%		70-130	28-JUN-19



Workorder: L2300113 Report Date: 08-JUL-19 Page 6 of 11

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R469	0172							
	NS	L2300113-2	04.0		0/			
Bismuth (Bi)-Disso			94.8		%		70-130	28-JUN-19
Boron (B)-Dissolve			95.4		%		70-130	28-JUN-19
Cadmium (Cd)-Dis			98.7		%		70-130	28-JUN-19
Calcium (Ca)-Diss			N/A	MS-B	%		-	28-JUN-19
Chromium (Cr)-Dis			95.6		%		70-130	28-JUN-19
Cobalt (Co)-Dissol			95.7		%		70-130	28-JUN-19
Copper (Cu)-Disso			95.7		%		70-130	28-JUN-19
Iron (Fe)-Dissolved			97.1		%		70-130	28-JUN-19
Lead (Pb)-Dissolve			92.6		%		70-130	28-JUN-19
Lithium (Li)-Dissol			95.0		%		70-130	28-JUN-19
Magnesium (Mg)-			N/A	MS-B	%		-	28-JUN-19
Manganese (Mn)-[96.9		%		70-130	28-JUN-19
Molybdenum (Mo)-			94.2		%		70-130	28-JUN-19
Nickel (Ni)-Dissolv	ed		95.9		%		70-130	28-JUN-19
Phosphorus (P)-Di			93.0		%		70-130	28-JUN-19
Potassium (K)-Dis	solved		95.2		%		70-130	28-JUN-19
Selenium (Se)-Dis	solved		97.6		%		70-130	28-JUN-19
Silicon (Si)-Dissolv	red .		92.0		%		70-130	28-JUN-19
Silver (Ag)-Dissolv	ed		100.8		%		70-130	28-JUN-19
Sodium (Na)-Disso	olved		N/A	MS-B	%		-	28-JUN-19
Strontium (Sr)-Diss	solved		N/A	MS-B	%		-	28-JUN-19
Sulfur (S)-Dissolve	ed		99.4		%		70-130	28-JUN-19
Thallium (TI)-Disso	olved		92.7		%		70-130	28-JUN-19
Tin (Sn)-Dissolved			96.2		%		70-130	28-JUN-19
Titanium (Ti)-Disso	olved		94.4		%		70-130	28-JUN-19
Uranium (U)-Disso	olved		94.0		%		70-130	28-JUN-19
Vanadium (V)-Diss	solved		95.2		%		70-130	28-JUN-19
Zinc (Zn)-Dissolve	d		102.6		%		70-130	28-JUN-19
Zirconium (Zr)-Dis	solved		96.2		%		70-130	28-JUN-19
NH3-F-VA	Water							
Batch R469								
WG3091155-3 D Ammonia, Total (a	oup s N)	L2298732-1 0.580	0.546		mg/L	6.1	20	30-JUN-19
WG3091155-2 L	.cs							



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Client: GHD Limited

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Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA	Water							
Batch R4691378								
WG3091155-2 LCS Ammonia, Total (as N)			94.6		%		85-115	30-JUN-19
WG3091155-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	30-JUN-19
WG3091155-4 MS Ammonia, Total (as N)		L2298732-2	98.5		%		75-125	30-JUN-19
Batch R4691897								
WG3091853-3 DUP Ammonia, Total (as N)		L2299932-3 0.285	0.298		mg/L	4.2	20	30-JUN-19
WG3091853-2 LCS Ammonia, Total (as N)			97.8		%		85-115	30-JUN-19
WG3091853-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	30-JUN-19
NO2-L-IC-N-VA	Water							
Batch R4692125								
WG3090902-3 DUP Nitrite (as N)		L2298732-1 0.068	0.071		mg/L	4.5	20	29-JUN-19
WG3090902-2 LCS Nitrite (as N)			94.5		%		90-110	29-JUN-19
WG3090902-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	29-JUN-19
WG3090902-4 MS Nitrite (as N)		L2298732-3	97.4		%		75-125	29-JUN-19
NO3-L-IC-N-VA	Water							
Batch R4692125								
WG3090902-3 DUP Nitrate (as N)		L2298732-1 1.48	1.52		mg/L	2.7	20	29-JUN-19
WG3090902-2 LCS Nitrate (as N)			97.0		%		90-110	29-JUN-19
WG3090902-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	29-JUN-19
WG3090902-4 MS Nitrate (as N)		L2298732-3	101.2		%		75-125	29-JUN-19
PH-PCT-VA	Water							



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-PCT-VA	Water							
Batch R469106	5							
WG3090803-2 CRM pH		VA-PH7-BUF	7.01		рН		6.9-7.1	28-JUN-19
WG3090823-2 CRN pH		VA-PH7-BUF	7.01		рН		6.9-7.1	28-JUN-19
WG3090803-5 DUP pH		L2299598-2 8.47	8.49	J	рН	0.02	0.3	28-JUN-19
SO4-IC-N-VA	Water							
Batch R469212	5							
WG3090902-3 DUP Sulfate (SO4)		L2298732-1 781	830		mg/L	6.0	20	29-JUN-19
WG3090902-2 LCS Sulfate (SO4)			96.0		%		90-110	29-JUN-19
WG3090902-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	29-JUN-19
WG3090902-4 MS Sulfate (SO4)		L2298732-3	98.5		%		75-125	29-JUN-19
TDS-VA	Water							
Batch R469175	6							
WG3092632-3 DUP Total Dissolved Solids		L2300113-1 57	47		mg/L	19	20	30-JUN-19
WG3092632-2 LCS Total Dissolved Solids			104.4		%		85-115	30-JUN-19
WG3092632-1 MB Total Dissolved Solids			<10		mg/L		10	30-JUN-19

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Client: GHD Limited Page 9 of 11

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

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

Workorder: L2300113 Report Date: 08-JUL-19

Client: GHD Limited

400 - 179 Colonnade Road

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Contact: Airesse MacPhee

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Hold Time Exceedances:

ALOD LACE AND	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
,	1	25-JUN-19 10:45	28-JUN-19 12:48	0.25	74	hours	EHTR-FM
	2	25-JUN-19 12:00	28-JUN-19 12:48	0.25	73	hours	EHTR-FN
	3	25-JUN-19 12:05	28-JUN-19 12:48	0.25	73	hours	EHTR-FN
	4	25-JUN-19 12:45	28-JUN-19 12:48	0.25	72	hours	EHTR-FN
	5	25-JUN-19 15:30	28-JUN-19 12:48	0.25	69	hours	EHTR-FN
	6	25-JUN-19 16:30	28-JUN-19 12:48	0.25	68	hours	EHTR-FN
	7	25-JUN-19 16:35	28-JUN-19 12:48	0.25	68	hours	EHTR-FN
	8	25-JUN-19 17:00	28-JUN-19 12:48	0.25	68	hours	EHTR-FN
	9	25-JUN-19 17:45	28-JUN-19 12:48	0.25	67	hours	EHTR-FN
	10	25-JUN-19 18:30	28-JUN-19 12:48	0.25	66	hours	EHTR-FN
	11	25-JUN-19 19:00	28-JUN-19 12:48	0.25	66	hours	EHTR-FN
Anions and Nutrients							
Nitrate in Water by IC (Low	Level)						
	1	25-JUN-19 10:45	29-JUN-19 08:17	3	4	days	EHT
	2	25-JUN-19 12:00	29-JUN-19 08:17	3	4	days	EHT
	3	25-JUN-19 12:05	29-JUN-19 08:17	3	4	days	EHT
	4	25-JUN-19 12:45	29-JUN-19 08:17	3	4	days	EHT
	5	25-JUN-19 15:30	29-JUN-19 08:17	3	4	days	EHT
	6	25-JUN-19 16:30	29-JUN-19 08:17	3	4	days	EHT
	7	25-JUN-19 16:35	29-JUN-19 08:17	3	4	days	EHT
	8	25-JUN-19 17:00	29-JUN-19 08:17	3	4	days	EHT
	9	25-JUN-19 17:45	29-JUN-19 08:17	3	4	days	EHT
	10	25-JUN-19 18:30	29-JUN-19 08:17	3	4	days	EHT
	11	25-JUN-19 19:00	29-JUN-19 08:17	3	4	days	EHT
Nitrite in Water by IC (Low	Level)						
	1	25-JUN-19 10:45	29-JUN-19 08:17	3	4	days	EHT
	2	25-JUN-19 12:00	29-JUN-19 08:17	3	4	days	EHT
	3	25-JUN-19 12:05	29-JUN-19 08:17	3	4	days	EHT
	4	25-JUN-19 12:45	29-JUN-19 08:17	3	4	days	EHT
	5	25-JUN-19 15:30	29-JUN-19 08:17	3	4	days	EHT
	6	25-JUN-19 16:30	29-JUN-19 08:17	3	4	days	EHT
	7	25-JUN-19 16:35	29-JUN-19 08:17	3	4	days	EHT
	8	25-JUN-19 17:00	29-JUN-19 08:17	3	4	days	EHT
	9	25-JUN-19 17:45	29-JUN-19 08:17	3	4	days	EHT
	10	25-JUN-19 18:30	29-JUN-19 08:17	3	4	days	EHT
	11	25-JUN-19 19:00	29-JUN-19 08:17	3	4	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2300113 were received on 27-JUN-19 09:50.

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.

Workorder: L2300113 Report Date: 08-JUL-19

Client: GHD Limited Page 11 of 11

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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 predetermined 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**



L2300113-COFC

WG-56484-250619 coc Number: 17 - \$160

Environmental Canada Toll Free: 1 800 668 9878

	www.alsglobal.com	_																							
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GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 27-JUN-19

Report Date: 08-JUL-19 17:04 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2300116Project P.O. #: 73515713

Job Reference: 056484-52

C of C Numbers: 17-WG-56484-250619

Legal Site Desc:

Comments: NO2 + NO3 included as requested.

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2300116 CONTD....

PAGE 2 of 6 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300116-1 WS-56484-250619-CT-01 Sampled By: M. Dyke/ C. Thorne on 25-JUN-19 @ 13:00 Matrix: WS)						
Physical Tests							
Conductivity	29.9		2.0	uS/cm		28-JUN-19	R4691065
Hardness (as CaCO3)	8.01		0.50	mg/L		28-JUN-19	
рН	7.11		0.10	рН		28-JUN-19	R4691065
Total Dissolved Solids	37		10	mg/L		30-JUN-19	R4691756
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	7.4		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JUN-19	R4691065
Alkalinity, Total (as CaCO3)	7.4		1.0	mg/L		28-JUN-19	R4691065
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691378
Chloride (CI)	3.54		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		02-JUL-19	
Nitrate (as N)	< 0.0050		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	< 0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	0.99		0.30	mg/L		29-JUN-19	R4692125
Total Metals							
Aluminum (Al)-Total	0.0322		0.0030	mg/L		28-JUN-19	R4690172
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JUN-19	R4690172
Arsenic (As)-Total	0.00024		0.00010	mg/L		28-JUN-19	R4690172
Barium (Ba)-Total	0.00129		0.00010	mg/L		28-JUN-19	R4690172
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		28-JUN-19	R4690172
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JUN-19	R4690172
Boron (B)-Total	<0.010		0.010	mg/L		28-JUN-19	R4690172
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		28-JUN-19	R4690172
Calcium (Ca)-Total	1.87		0.050	mg/L		28-JUN-19	R4690172
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-JUN-19	R4690172
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		28-JUN-19	R4690172
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-JUN-19	R4690172
Iron (Fe)-Total	0.044		0.010	mg/L		28-JUN-19	R4690172
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-JUN-19	R4690172
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-JUN-19	R4690172
Magnesium (Mg)-Total	0.855		0.0050	mg/L		28-JUN-19	R4690172
Manganese (Mn)-Total	0.00342		0.00010	mg/L		28-JUN-19	R4690172
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		02-JUL-19	R4692176
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-JUN-19	R4690172
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-JUN-19	R4690172
Phosphorus (P)-Total	<0.050		0.050	mg/L		28-JUN-19	R4690172
Potassium (K)-Total	0.165		0.050	mg/L		28-JUN-19	R4690172
Selenium (Se)-Total	<0.000050		0.000050	mg/L		28-JUN-19	R4690172
Silicon (Si)-Total	2.56		0.10	mg/L		28-JUN-19	R4690172

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

L2300116 CONTD....

PAGE 3 of 6 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300116-1 WS-56484-250619-CT-01 Sampled By: M. Dyke/ C. Thorne on 25-JUN-19 @ 13:0 Matrix: WS	00						
Total Metals							
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JUN-19	R4690172
Sodium (Na)-Total	2.72		0.050	mg/L		28-JUN-19	R4690172
Strontium (Sr)-Total	0.00901		0.00020	mg/L		28-JUN-19	R4690172
Sulfur (S)-Total	<0.50		0.50	mg/L		28-JUN-19	R4690172
Thallium (TI)-Total	<0.000010		0.000010	mg/L		28-JUN-19	R4690172
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JUN-19	R4690172
Titanium (Ti)-Total	0.00031		0.00030	mg/L		28-JUN-19	R4690172
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-JUN-19	R4690172
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JUN-19	R4690172
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-JUN-19	R4690172
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		28-JUN-19	R4690172
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691700
Dissolved Metals Filtration Location	FIELD					27-JUN-19	R4689761
Aluminum (Al)-Dissolved	0.0288		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Antimony (Sb)-Dissolved	< 0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Barium (Ba)-Dissolved	0.00121		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Calcium (Ca)-Dissolved	1.81		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Copper (Cu)-Dissolved	0.00022		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
Iron (Fe)-Dissolved	0.037		0.010	mg/L	27-JUN-19	28-JUN-19	R4690172
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Magnesium (Mg)-Dissolved	0.846		0.0050	mg/L	27-JUN-19	28-JUN-19	R4690172
Manganese (Mn)-Dissolved	0.00229		0.00010	mg/L	27-JUN-19	28-JUN-19	R4690172
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	02-JUL-19	R4692176
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Nickel (Ni)-Dissolved	< 0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Phosphorus (P)-Dissolved	< 0.050		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Potassium (K)-Dissolved	0.135		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silicon (Si)-Dissolved	2.52		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Sodium (Na)-Dissolved	2.83		0.050	mg/L	27-JUN-19	28-JUN-19	R4690172
Strontium (Sr)-Dissolved	0.00872		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172

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

L2300116 CONTD.... PAGE 4 of 6

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300116-1 WS-56484-250619-CT-01							
Sampled By: M. Dyke/ C. Thorne on 25-JUN-19 @ 13:1 Matrix: WS	ро						
Dissolved Metals							
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	27-JUN-19	28-JUN-19	R4690172
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JUN-19	1	R4690172
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-JUN-19	28-JUN-19	R4690172
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-JUN-19	28-JUN-19	R4690172
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JUN-19	28-JUN-19	R4690172
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JUN-19	28-JUN-19	R4690172
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-JUN-19	28-JUN-19	R4690172
* Refer to Referenced Information for Qualifiers (if any) and	1.8.4. 1.1			 	l .	1	1

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

056484-52

L2300116 CONTD....

PAGE 5 of 6 Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2300116-1	
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2300116-1	
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2300116-1	
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2300116-1	

Sample Parameter Qualifier key listed:

Qualifier Description

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-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbin Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where maduring preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserver with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

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

Water samples undergo a cold-oxidatio የሚያዝሏ 56 mine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), plose with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC EPA 200.2/6020A (mod)

Water samples are digested with nitric af a PM arochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

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

L2300116 CONTD....

Reference Information

PAGE 6 of 6 Version: FINAL

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

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using proceders indexpiced 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.

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

17-WG-56484-250619

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.



Workorder: L2300116 Report Date: 08-JUL-19 Page 1 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R469106	55							
WG3090823-3 CRM Alkalinity, Total (as Ca		VA-ALK-TITR-	-CONTROL 101.5		%		85-115	28-JUN-19
WG3090823-1 MB	,						00 110	20 0011 10
Alkalinity, Total (as Ca	aCO3)		<1.0		mg/L		1	28-JUN-19
CL-IC-N-VA	Water							
Batch R469212	25							
WG3090902-3 DUF Chloride (CI)	•	L2298732-1 425	450		mg/L	5.7	20	29-JUN-19
WG3090902-2 LCS	}							
Chloride (CI)			94.9		%		90-110	29-JUN-19
WG3090902-1 MB			0.50		//		0.5	
Chloride (CI)			<0.50		mg/L		0.5	29-JUN-19
WG3090902-4 MS Chloride (CI)		L2298732-3	98.7		%		75-125	29-JUN-19
EC-PCT-VA	Water							
Batch R469106	55							
WG3090823-4 CRM	Л	VA-EC-PCT-C						
Conductivity			103.3		%		90-110	28-JUN-19
WG3090823-1 MB								
Conductivity			<2.0		uS/cm		2	28-JUN-19
F-IC-N-VA	Water							
Batch R469212	25							
WG3090902-3 DUF	•	L2298732-1						
Fluoride (F)		<0.40	<0.40	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3090902-2 LCS Fluoride (F)	}		94.7		%		90-110	29-JUN-19
WG3090902-1 MB							00 110	20 0011 10
Fluoride (F)			<0.020		mg/L		0.02	29-JUN-19
WG3090902-4 MS		L2298732-3	00.4		0/		75.405	00 1111 40
Fluoride (F)			99.4		%		75-125	29-JUN-19
HG-D-CVAA-VA	Water							
Batch R469217								
WG3093169-7 DUF Mercury (Hg)-Dissolve		L2300185-1 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093169-6 LCS Mercury (Hg)-Dissolve			102.3		%		80-120	02-JUL-19
WG3093169-5 MB			-					



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4692176 WG3093169-5 MB Mercury (Hg)-Dissolved			<0.0000050	<u>.</u>	mg/L		0.000005	02-JUL-19
WG3093169-8 MS Mercury (Hg)-Dissolved		L2300116-1	97.9		%		70-130	02-JUL-19
HG-T-CVAA-VA	Water							
Batch R4692176 WG3093700-1 DUP Mercury (Hg)-Total		L2300517-1 0.0000110	0.0000092		mg/L	18	20	02-JUL-19
WG3093700-3 DUP Mercury (Hg)-Total		L2300477-2 N/A	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093700-7 DUP Mercury (Hg)-Total		L2301141-1 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093700-9 DUP Mercury (Hg)-Total		L2301141-18 < 0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093700-12 LCS Mercury (Hg)-Total			102.4		%		80-120	02-JUL-19
WG3093700-11 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	02-JUL-19
WG3093700-10 MS Mercury (Hg)-Total		L2301141-19	101.7		%		70-130	02-JUL-19
WG3093700-2 MS Mercury (Hg)-Total		L2298776-1	94.4		%		70-130	02-JUL-19
WG3093700-4 MS Mercury (Hg)-Total		L2300474-1	94.2		%		70-130	02-JUL-19
WG3093700-8 MS Mercury (Hg)-Total		L2301141-2	104.6		%		70-130	02-JUL-19
MET-D-CCMS-VA	Water							
Batch R4690172		1 0000440 4						
WG3090822-3 DUP Aluminum (Al)-Dissolved	I	L2300113-1 0.0022	0.0027		mg/L	20	20	28-JUN-19
Antimony (Sb)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Barium (Ba)-Dissolved		0.00176	0.00174		mg/L	1.1	20	28-JUN-19
Beryllium (Be)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JUN-19
Cadmium (Cd)-Dissolved	d	<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JUN-19



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MET-D-CCMS-VA	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Calcium (Ca)-Dissolved 9.51 9.51 mg/L 0.1 20 28-JUN-19	MET-D-CCMS-VA	Water							
Calcium (Ca)-Dissolved	Batch R46901	72							
Chromium (Cr)-Dissolved 0.00014 0.00010 mg/L 0.2 20 28-JUN-19 Cobalt (Co)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Copper (Cu)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 28-JUN-19 Lead (Pb)-Dissolved <0.00050 <0.00050 <0.000050 RPD-NA mg/L N/A 20 28-JUN-19 Lithium (Li)-Dissolved <0.0010 <0.0010 RPD-NA mg/L N/A 20 28-JUN-19 Magnesium (Mg)-Dissolved <0.0010 <0.0010 RPD-NA mg/L N/A 20 28-JUN-19 Molybdenum (Mg)-Dissolved <0.00013 <0.00013 RPD-NA mg/L N/A 20 28-JUN-19 Nickel (Ni)-Dissolved <0.00050 <0.0050 RPD-NA mg/L N/A 20 28-JUN-19 Nickel (Ni)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 28-JUN-19				0.51		ma/l	0.4	20	00 11111 40
Cobalt (Co)-Dissolved < 0.00010 < 0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Copper (Cu)-Dissolved < 0.00020									
Copper (Cu)-Dissolved c0.00020 c0.010 RPD-NA mg/L N/A 20 28-JUN-19 Iron (Fe)-Dissolved c0.010 RPD-NA mg/L N/A 20 28-JUN-19 Lead (Pb)-Dissolved c0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Magnesium (Mg)-Dissolved c0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Manganese (Mn)-Dissolved c0.00013 ng/L N/A 20 28-JUN-19 Molybdenum (Mo)-Dissolved c0.00013 mg/L N/A 20 28-JUN-19 Molybdenum (Mo)-Dissolved c0.00013 mg/L N/A 20 28-JUN-19 Molybdenum (Mo)-Dissolved c0.00013 RPD-NA mg/L N/A 20 28-JUN-19 Photassium (K)-Dissolved ntps://doi.org/10.10">ntps://doi.org/10.10">ntps://doi.org/10.10">ntps://	` '								
Iron (Fe)-Dissolved	` ,								
Lead (Pb)-Dissolved	11 ()	ea							
Lithium (Li)-Dissolved	` ,								
Magnesium (Mg)-Dissolved 1.43 1.44 mg/L 0.9 20 28-JUN-19 Manganese (Mn)-Dissolved <0.00010	` ,								
Manganese (Mn)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Molybdenum (Mo)-Dissolved 0.000131 0.000137 mg/L 4.4 20 28-JUN-19 Nickel (Ni)-Dissolved <0.00050	, ,				RPD-NA				28-JUN-19
Molybdenum (Mo)-Dissolved 0.000131 0.000137 mg/L 4.4 20 28-JUN-19 Nickel (Ni)-Dissolved <0.00050	S (S)					•	0.9	20	28-JUN-19
Nickel (Ni)-Dissolved < 0.00050 < 0.00050 RPD-NA mg/L N/A 20 28-JUN-19 Phosphorus (P)-Dissolved < 0.050	3 , ,		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Phosphorus (P)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 28-JUN-19 Potassium (K)-Dissolved 0.124 0.128 mg/L 3.5 20 28-JUN-19 Selenium (Se)-Dissolved 0.000081 0.000068 mg/L 17 20 28-JUN-19 Silicon (Si)-Dissolved 3.31 3.29 mg/L 0.5 20 28-JUN-19 Silver (Ag)-Dissolved <0.000010	Molybdenum (Mo)-D	issolved	0.000131	0.000137		mg/L	4.4	20	28-JUN-19
Potassium (K)-Dissolved 0.124 0.128 mg/L 3.5 20 28-JUN-19 Selenium (Se)-Dissolved 0.000081 0.000068 mg/L 17 20 28-JUN-19 Silicon (Si)-Dissolved 3.31 3.29 mg/L 0.5 20 28-JUN-19 Silver (Ag)-Dissolved <0.000010	Nickel (Ni)-Dissolved	I	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JUN-19
Selenium (Se)-Dissolved 0.000081 0.000068 mg/L 17 20 28-JUN-19 Silicon (Si)-Dissolved 3.31 3.29 mg/L 0.5 20 28-JUN-19 Silver (Ag)-Dissolved <0.000010	Phosphorus (P)-Diss	solved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-JUN-19
Silicon (Si)-Dissolved 3.31 3.29 mg/L 0.5 20 28-JUN-19 Silver (Ag)-Dissolved <0.000010	Potassium (K)-Disso	lved	0.124	0.128		mg/L	3.5	20	28-JUN-19
Silver (Ag)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 28-JUN-19 Sodium (Na)-Dissolved 0.870 0.877 mg/L 0.8 20 28-JUN-19 Strontium (Sr)-Dissolved 0.0141 0.0143 mg/L 1.3 20 28-JUN-19 Sulfur (S)-Dissolved 0.69 0.64 mg/L 7.5 20 28-JUN-19 Thallium (Ti)-Dissolved <0.000010	Selenium (Se)-Disso	lved	0.000081	0.000068		mg/L	17	20	28-JUN-19
Sodium (Na)-Dissolved 0.870 0.877 mg/L 0.8 20 28-JUN-19 Strontium (Sr)-Dissolved 0.0141 0.0143 mg/L 1.3 20 28-JUN-19 Sulfur (S)-Dissolved 0.69 0.64 mg/L 7.5 20 28-JUN-19 Thallium (Ti)-Dissolved <0.000010	Silicon (Si)-Dissolved	t	3.31	3.29		mg/L	0.5	20	28-JUN-19
Strontium (Sr)-Dissolved 0.0141 0.0143 mg/L 1.3 20 28-JUN-19 Sulfur (S)-Dissolved 0.69 0.64 mg/L 7.5 20 28-JUN-19 Thallium (TI)-Dissolved <0.000010	Silver (Ag)-Dissolved	I	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Sulfur (S)-Dissolved 0.69 0.64 mg/L 7.5 20 28-JUN-19 Thallium (TI)-Dissolved <0.000010	Sodium (Na)-Dissolv	ed	0.870	0.877		mg/L	0.8	20	28-JUN-19
Thallium (TI)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 28-JUN-19 Tin (Sn)-Dissolved <0.00010	Strontium (Sr)-Disso	lved	0.0141	0.0143		mg/L	1.3	20	28-JUN-19
Tin (Sn)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 28-JUN-19 Titanium (Ti)-Dissolved <0.00030	Sulfur (S)-Dissolved		0.69	0.64		mg/L	7.5	20	28-JUN-19
Titanium (Ti)-Dissolved	Thallium (TI)-Dissolv	ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Uranium (U)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 28-JUN-19 Vanadium (V)-Dissolved 0.00099 0.00099 mg/L 0.4 20 28-JUN-19 Zinc (Zn)-Dissolved <0.0010	Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Vanadium (V)-Dissolved 0.00099 0.00099 mg/L 0.4 20 28-JUN-19 Zinc (Zn)-Dissolved <0.0010	Titanium (Ti)-Dissolv	red	<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-JUN-19
Zinc (Zn)-Dissolved <0.0010 <0.0010 RPD-NA mg/L N/A 20 28-JUN-19 Zirconium (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 28-JUN-19 WG3090822-2 LCS Aluminum (Al)-Dissolved 101.9 % 80-120 28-JUN-19 Antimony (Sb)-Dissolved 105.0 % 80-120 28-JUN-19 Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Uranium (U)-Dissolv	ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Zirconium (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 28-JUN-19 WG3090822-2 LCS LCS 80-120 28-JUN-19 Aluminum (Al)-Dissolved 101.9 % 80-120 28-JUN-19 Antimony (Sb)-Dissolved 97.5 % 80-120 28-JUN-19 Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 94.4 % 80-120 28-JUN-19	Vanadium (V)-Dissol	ved	0.00099	0.00099		mg/L	0.4	20	28-JUN-19
WG3090822-2 LCS Aluminum (Al)-Dissolved 101.9 % 80-120 28-JUN-19 Antimony (Sb)-Dissolved 105.0 % 80-120 28-JUN-19 Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-JUN-19
Aluminum (Al)-Dissolved 101.9 % 80-120 28-JUN-19 Antimony (Sb)-Dissolved 105.0 % 80-120 28-JUN-19 Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Zirconium (Zr)-Disso	lved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	28-JUN-19
Antimony (Sb)-Dissolved 105.0 % 80-120 28-JUN-19 Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	WG3090822-2 LC	S							
Arsenic (As)-Dissolved 97.5 % 80-120 28-JUN-19 Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Aluminum (Al)-Disso	lved		101.9		%		80-120	28-JUN-19
Barium (Ba)-Dissolved 101.5 % 80-120 28-JUN-19 Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Antimony (Sb)-Disso	lved		105.0		%		80-120	28-JUN-19
Beryllium (Be)-Dissolved 94.4 % 80-120 28-JUN-19	Arsenic (As)-Dissolv	ed		97.5		%		80-120	28-JUN-19
	Barium (Ba)-Dissolve	ed		101.5		%		80-120	28-JUN-19
Bismuth (Bi)-Dissolved 96.7 % 80-120 28-JUN-19	Beryllium (Be)-Disso	lved		94.4		%		80-120	28-JUN-19
	Bismuth (Bi)-Dissolv	ed		96.7		%		80-120	28-JUN-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R469	90172							
WG3090822-2 Boron (B)-Dissolv	LCS red		88.9		%		80-120	20 ILIN 40
Cadmium (Cd)-Di			97.4		%		80-120	28-JUN-19 28-JUN-19
Calcium (Ca)-Dis			93.2		%		80-120	28-JUN-19
Chromium (Cr)-D			99.2		%		80-120	28-JUN-19
Cobalt (Co)-Disso			97.6		%		80-120	28-JUN-19
Copper (Cu)-Diss			95.3		%		80-120	28-JUN-19 28-JUN-19
Iron (Fe)-Dissolve			100.9		%		80-120	28-JUN-19
Lead (Pb)-Dissolv			95.4		%			
Lithium (Li)-Disso			94.1		%		80-120 80-120	28-JUN-19 28-JUN-19
Magnesium (Mg)			98.6		%		80-120	28-JUN-19 28-JUN-19
Manganese (Mn)			99.5		%		80-120	28-JUN-19
Molybdenum (Mo			92.9		%		80-120	28-JUN-19 28-JUN-19
Nickel (Ni)-Dissol	•		96.8		%		80-120	28-JUN-19
Phosphorus (P)-E			105.0		%		70-130	28-JUN-19
Potassium (K)-Di			100.5		%		80-120	28-JUN-19
Selenium (Se)-Di			98.1		%		80-120	28-JUN-19
Silicon (Si)-Disso			108.7		%		60-140	28-JUN-19
Silver (Ag)-Dissol			99.3		%		80-120	28-JUN-19
Sodium (Na)-Diss			99.4		%		80-120	28-JUN-19
Strontium (Sr)-Dis	ssolved		98.9		%		80-120	28-JUN-19
Sulfur (S)-Dissolv	red		100.1		%		80-120	28-JUN-19
Thallium (TI)-Diss	solved		94.8		%		80-120	28-JUN-19
Tin (Sn)-Dissolve	d		98.8		%		80-120	28-JUN-19
Titanium (Ti)-Diss	solved		93.5		%		80-120	28-JUN-19
Uranium (U)-Diss	olved		98.5		%		80-120	28-JUN-19
Vanadium (V)-Dis	ssolved		99.3		%		80-120	28-JUN-19
Zinc (Zn)-Dissolv	ed		99.5		%		80-120	28-JUN-19
Zirconium (Zr)-Di	ssolved		93.7		%		80-120	28-JUN-19
	МВ				,,		0.001	
Aluminum (Al)-Di			<0.0010		mg/L		0.001	28-JUN-19
Antimony (Sb)-Di			<0.00010		mg/L		0.0001	28-JUN-19
Arsenic (As)-Diss			<0.00010		mg/L		0.0001	28-JUN-19
Barium (Ba)-Diss			<0.00010		mg/L		0.0001	28-JUN-19
Beryllium (Be)-Dis	ssolved		<0.00010		mg/L		0.0001	28-JUN-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R469	0172							
	//B		0.00005	0	/I		0.00005	
Bismuth (Bi)-Disso			<0.00005	0	mg/L		0.00005	28-JUN-19
Boron (B)-Dissolve			<0.010	- 0	mg/L		0.01	28-JUN-19
Cadmium (Cd)-Dis			<0.00000	50	mg/L		0.000005	28-JUN-19
Calcium (Ca)-Diss			<0.050		mg/L		0.05	28-JUN-19
Chromium (Cr)-Dis			<0.00010		mg/L		0.0001	28-JUN-19
Cobalt (Co)-Dissol			<0.00010		mg/L		0.0001	28-JUN-19
Copper (Cu)-Disso			<0.00020		mg/L		0.0002	28-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-JUN-19
Lead (Pb)-Dissolve			<0.00005	0	mg/L		0.00005	28-JUN-19
Lithium (Li)-Dissol			<0.0010		mg/L		0.001	28-JUN-19
Magnesium (Mg)-[<0.0050		mg/L		0.005	28-JUN-19
Manganese (Mn)-I			<0.00010		mg/L		0.0001	28-JUN-19
Molybdenum (Mo)			<0.00005	0	mg/L		0.00005	28-JUN-19
Nickel (Ni)-Dissolv			<0.00050		mg/L		0.0005	28-JUN-19
Phosphorus (P)-Di	issolved		<0.050		mg/L		0.05	28-JUN-19
Potassium (K)-Dis	solved		<0.050		mg/L		0.05	28-JUN-19
Selenium (Se)-Dis	solved		<0.00005	0	mg/L		0.00005	28-JUN-19
Silicon (Si)-Dissolv	/ed		< 0.050		mg/L		0.05	28-JUN-19
Silver (Ag)-Dissolv	red .		<0.00001	0	mg/L		0.00001	28-JUN-19
Sodium (Na)-Disso	olved		< 0.050		mg/L		0.05	28-JUN-19
Strontium (Sr)-Disc	solved		<0.00020		mg/L		0.0002	28-JUN-19
Sulfur (S)-Dissolve	ed		<0.50		mg/L		0.5	28-JUN-19
Thallium (TI)-Disso	olved		<0.00001	0	mg/L		0.00001	28-JUN-19
Tin (Sn)-Dissolved	I		<0.00010		mg/L		0.0001	28-JUN-19
Titanium (Ti)-Disso	olved		<0.00030		mg/L		0.0003	28-JUN-19
Uranium (U)-Disso	olved		<0.00001	0	mg/L		0.00001	28-JUN-19
Vanadium (V)-Diss	solved		<0.00050		mg/L		0.0005	28-JUN-19
Zinc (Zn)-Dissolve	d		<0.0010		mg/L		0.001	28-JUN-19
Zirconium (Zr)-Dis	solved		<0.00020		mg/L		0.0002	28-JUN-19
WG3090822-4 N Aluminum (Al)-Dis		L2300113-2	96.2		%		70-130	28-JUN-19
Antimony (Sb)-Dis			101.4		%		70-130	28-JUN-19
Arsenic (As)-Disso			95.2		%		70-130	28-JUN-19
Barium (Ba)-Disso			97.4		%		70-130	28-JUN-19



Workorder: L2300116 Report Date: 08-JUL-19 Page 6 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							_
Batch R469017	72							
WG3090822-4 MS		L2300113-2						
Beryllium (Be)-Dissolv			97.8		%		70-130	28-JUN-19
Bismuth (Bi)-Dissolve	d		94.8		%		70-130	28-JUN-19
Boron (B)-Dissolved			95.4		%		70-130	28-JUN-19
Cadmium (Cd)-Dissol	ved		98.7		%		70-130	28-JUN-19
Calcium (Ca)-Dissolve	ed		N/A	MS-B	%		-	28-JUN-19
Chromium (Cr)-Disso	lved		95.6		%		70-130	28-JUN-19
Cobalt (Co)-Dissolved	i		95.7		%		70-130	28-JUN-19
Copper (Cu)-Dissolve	ed		95.7		%		70-130	28-JUN-19
Iron (Fe)-Dissolved			97.1		%		70-130	28-JUN-19
Lead (Pb)-Dissolved			92.6		%		70-130	28-JUN-19
Lithium (Li)-Dissolved			95.0		%		70-130	28-JUN-19
Magnesium (Mg)-Diss	solved		N/A	MS-B	%		-	28-JUN-19
Manganese (Mn)-Diss	solved		96.9		%		70-130	28-JUN-19
Molybdenum (Mo)-Dis	ssolved		94.2		%		70-130	28-JUN-19
Nickel (Ni)-Dissolved			95.9		%		70-130	28-JUN-19
Phosphorus (P)-Disso	olved		93.0		%		70-130	28-JUN-19
Potassium (K)-Dissolv	ved		95.2		%		70-130	28-JUN-19
Selenium (Se)-Dissolv	ved		97.6		%		70-130	28-JUN-19
Silicon (Si)-Dissolved			92.0		%		70-130	28-JUN-19
Silver (Ag)-Dissolved			100.8		%		70-130	28-JUN-19
Sodium (Na)-Dissolve	ed		N/A	MS-B	%		-	28-JUN-19
Strontium (Sr)-Dissolv	ved .		N/A	MS-B	%		-	28-JUN-19
Sulfur (S)-Dissolved			99.4		%		70-130	28-JUN-19
Thallium (TI)-Dissolve	ed		92.7		%		70-130	28-JUN-19
Tin (Sn)-Dissolved			96.2		%		70-130	28-JUN-19
Titanium (Ti)-Dissolve	ed		94.4		%		70-130	28-JUN-19
Uranium (U)-Dissolve	d		94.0		%		70-130	28-JUN-19
Vanadium (V)-Dissolv	ved .		95.2		%		70-130	28-JUN-19
Zinc (Zn)-Dissolved			102.6		%		70-130	28-JUN-19
Zirconium (Zr)-Dissolv	ved		96.2		%		70-130	28-JUN-19

MET-T-CCMS-VA Water



Workorder: L2300116 Report Date: 08-JUL-19 Page 7 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4690172								
WG3090882-3 DUP Aluminum (Al)-Total		L2300116-1 0.0322	0.0325		mg/L	1.2	20	28-JUN-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Arsenic (As)-Total		0.00024	0.00023		mg/L	1.5	20	28-JUN-19
Barium (Ba)-Total		0.00129	0.00128		mg/L	0.5	20	28-JUN-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JUN-19
Cadmium (Cd)-Total		<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Calcium (Ca)-Total		1.87	1.91		mg/L	2.1	20	28-JUN-19
Chromium (Cr)-Total		<0.00010	0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JUN-19
Iron (Fe)-Total		0.044	0.044		mg/L	0.7	20	28-JUN-19
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-JUN-19
Magnesium (Mg)-Total		0.855	0.852		mg/L	0.4	20	28-JUN-19
Manganese (Mn)-Total		0.00342	0.00331		mg/L	3.1	20	28-JUN-19
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JUN-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-JUN-19
Potassium (K)-Total		0.165	0.165		mg/L	0.1	20	28-JUN-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JUN-19
Silicon (Si)-Total		2.56	2.56		mg/L	0.0	20	28-JUN-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Sodium (Na)-Total		2.72	2.69		mg/L	1.1	20	28-JUN-19
Strontium (Sr)-Total		0.00901	0.00928		mg/L	2.9	20	28-JUN-19
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-JUN-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JUN-19
Titanium (Ti)-Total		0.00031	0.00041	J	mg/L	0.00010	0.0006	28-JUN-19
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JUN-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JUN-19
Zinc (Zn)-Total		<0.0030	<0.0030		mg/L			28-JUN-19



Workorder: L2300116 Report Date: 08-JUL-19 Page 8 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4690172								
WG3090882-3 DUP		L2300116-1	0.0000					
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	28-JUN-19
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	28-JUN-19
WG3090882-2 LCS Aluminum (Al)-Total			106.3		%		80-120	28-JUN-19
Antimony (Sb)-Total			108.9		%		80-120	28-JUN-19
Arsenic (As)-Total			98.2		%		80-120	28-JUN-19
Barium (Ba)-Total			103.0		%		80-120	28-JUN-19
Beryllium (Be)-Total			97.5		%		80-120	28-JUN-19
Bismuth (Bi)-Total			100.4		%		80-120	28-JUN-19
Boron (B)-Total			94.3		%		80-120	28-JUN-19
Cadmium (Cd)-Total			100.3		%		80-120	28-JUN-19
Calcium (Ca)-Total			98.8		%		80-120	28-JUN-19
Chromium (Cr)-Total			98.3		%		80-120	28-JUN-19
Cobalt (Co)-Total			97.9		%		80-120	28-JUN-19
Copper (Cu)-Total			97.0		%		80-120	28-JUN-19
Iron (Fe)-Total			99.8		%		80-120	28-JUN-19
Lead (Pb)-Total			99.3		%		80-120	28-JUN-19
Lithium (Li)-Total			100.2		%		80-120	28-JUN-19
Magnesium (Mg)-Total			102.1		%		80-120	28-JUN-19
Manganese (Mn)-Total			100.0		%		80-120	28-JUN-19
Molybdenum (Mo)-Total			99.6		%		80-120	28-JUN-19
Nickel (Ni)-Total			97.3		%		80-120	28-JUN-19
Phosphorus (P)-Total			101.2		%		80-120	28-JUN-19
Potassium (K)-Total			103.5		%		80-120	28-JUN-19
Selenium (Se)-Total			97.0		%		80-120	28-JUN-19
Silicon (Si)-Total			103.8		%		80-120	28-JUN-19
Silver (Ag)-Total			103.1		%		80-120	28-JUN-19
Sodium (Na)-Total			104.6		%		80-120	28-JUN-19
Strontium (Sr)-Total			103.8		%		80-120	28-JUN-19
Sulfur (S)-Total			102.2		%		80-120	28-JUN-19
Thallium (TI)-Total			99.3		%		80-120	28-JUN-19
Tin (Sn)-Total			102.3		%		80-120	28-JUN-19
Titanium (Ti)-Total			98.0		%		80-120	28-JUN-19
Uranium (U)-Total			100.6		%		80-120	28-JUN-19



Workorder: L2300116 Report Date: 08-JUL-19 Page 9 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4690172								
WG3090882-2 LCS Vanadium (V)-Total			100.1		%		00.400	00 11111 40
Zinc (Zn)-Total			100.1		%		80-120 80-120	28-JUN-19 28-JUN-19
Zirconium (Zr)-Total			99.3		%		80-120	28-JUN-19 28-JUN-19
WG3090882-1 MB			55.5		70		00-120	26-JUN-19
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	28-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	28-JUN-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	28-JUN-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	28-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-JUN-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	28-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	28-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-JUN-19
Phosphorus (P)-Total			<0.050		mg/L		0.05	28-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-JUN-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	28-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-JUN-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	28-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-JUN-19
Sulfur (S)-Total			<0.50		mg/L		0.5	28-JUN-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	28-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-JUN-19



Workorder: L2300116 Report Date: 08-JUL-19 Page 10 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4690172 WG3090882-1 MB								
Uranium (U)-Total			<0.000010)	mg/L		0.00001	28-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-JUN-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	28-JUN-19
NH3-F-VA	Water							
Batch R4691378								
WG3091155-3 DUP Ammonia, Total (as N)		L2298732-1 0.580	0.546		mg/L	6.1	20	30-JUN-19
WG3091155-2 LCS Ammonia, Total (as N)			94.6		%		85-115	30-JUN-19
WG3091155-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	30-JUN-19
WG3091155-4 MS Ammonia, Total (as N)		L2298732-2	98.5		%		75-125	30-JUN-19
NO2-L-IC-N-VA	Water						70 120	00 0014 15
Batch R4692125	Trato.							
WG3090902-3 DUP Nitrite (as N)		L2298732-1 0.068	0.071		mg/L	4.5	20	29-JUN-19
WG3090902-2 LCS Nitrite (as N)			94.5		%		90-110	29-JUN-19
WG3090902-1 MB			54.5		70		90-110	29-JUN-19
Nitrite (as N)			<0.0010		mg/L		0.001	29-JUN-19
WG3090902-4 MS Nitrite (as N)		L2298732-3	97.4		%		75-125	29-JUN-19
NO3-L-IC-N-VA	Water							
Batch R4692125								
WG3090902-3 DUP		L2298732-1	4.50			0.7	00	
Nitrate (as N)		1.48	1.52		mg/L	2.7	20	29-JUN-19
WG3090902-2 LCS Nitrate (as N)			97.0		%		90-110	29-JUN-19
WG3090902-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	29-JUN-19
WG3090902-4 MS Nitrate (as N)		L2298732-3	101.2		%		75-125	29-JUN-19
PH-PCT-VA	Water							



Workorder: L2300116 Report Date: 08-JUL-19 Page 11 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
	Water 1065 CRM	VA-PH7-BUF	7.01		рН		6.9-7.1	28-JUN-19
SO4-IC-N-VA	Water							
	2125 DUP	L2298732-1 781	830		mg/L	6.0	20	29-JUN-19
` ,	_CS	701	96.0		₩ %	6.0	90-110	29-JUN-19
WG3090902-1 Sulfate (SO4)	МВ		<0.30		mg/L		0.3	29-JUN-19
WG3090902-4 Sulfate (SO4)	MS	L2298732-3	98.5		%		75-125	29-JUN-19
TDS-VA	Water							
	1756 DUP olids	L2300113-1 57	47		mg/L	19	20	30-JUN-19
Total Dissolved So			104.4		%		85-115	30-JUN-19
WG3092632-1 Notal Dissolved So	MB olids		<10		mg/L		10	30-JUN-19

Workorder: L2300116 Report Date: 08-JUL-19

GHD Limited Client: Page 12 of 13

400 - 179 Colonnade Road Ottawa ON K2E 7J4

Airesse MacPhee

Contact:

Legend:

ALS Control Limit (Data Quality Objectives)
Duplicate
Relative Percent Difference
Not Available
Laboratory Control Sample
Standard Reference Material
Matrix Spike
Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank
Internal Reference Material
Certified Reference Material
Continuing Calibration Verification
Calibration Verification Standard

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

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

Workorder: L2300116 Report Date: 08-JUL-19

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	25-JUN-19 13:00	28-JUN-19 12:48	0.25	72	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low	Level)						
	1	25-JUN-19 13:00	29-JUN-19 08:17	3	4	days	EHT
Nitrite in Water by IC (Low	Level)						
	1	25-JUN-19 13:00	29-JUN-19 08:17	3	4	days	EHT
Land Land Control Burgard							

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2300116 were received on 27-JUN-19 09:50.

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 predetermined 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.

Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2300116-COFC

1 COC Number: 17 - WS - 56484-250619

www.alsglobal.com Contact and company name below will appear on the final report Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To Report Format / Distribution Regular [R] X/Standard TAT if received by 3 pm - business days - no surcharges apply Company: **GHD Limited** Select Report Format: PDF EXCEL ED0 (DIGITAL) Airesse MacPhee 4 day [P4-20%] 1 Business day [E1 - 100%] Contact: 3 day [P3-25%] Phone: 1 604 248 3661 Compare Results to Criteria on Report - provide details below if box checked Same Day, Weekend or Statutory holiday [E2 -200% Select Distribution: EMAIL MAIL FAX (Laboratory opening fees may apply)] 2 day [P2-50%] Company address below will appear on the final report Street: 10271 Shellbridge Way, Suite 165 Email 1 or Fax Date and Time Required for all E&P TATs: City/Province: Richmond, BC Email 2 or tests that can not be performed according to the service level selected, you will be contacted. Postal Code: V6X 2W8 Email 3 Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice To Same as Report To YES NO Invoice Distribution detai ☐ YES ☐ NO Select Invoice Distribution: 🔲 EMAIL 📋 MAIL ☐ FAX Copy of Invoice with Report provide further Email 1 or Fax Company Sulfur, Hardr Suffer, Ha Email 2 Contact: **Project Information** Oil and Gas Required Fields (client use) Phosphorus, ALS Account # / Quote # Q72562 AFE/Cost Center PO# 80 Phosphorus, Sample is hazardous (please Job #: 11179286-Campbell River (Phase 52) SW Major/Minor Code: Routing Code: ₹03 PO / AFE: 73515713 Requisitioner: SAMPLES ON HOLD (speciated) LSD: 800 Location: Metak-LL-Hg, Moude Selam NUMBER OF ALS Contact: Anions (Cl. F. ALS Lab Work Order # (lab use only); Sampler Thorne Mannonia-N ں علہ 3 کما Alkafnilyı Sample Identification and/or Coordinates Date Time ALS Sample # 휸 Sample Type 2 2 (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) NIS-56484- 250619-CT-01 25-JUN-19 wS 6 13:00 × ×

Bright was some and the same	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below	SAMPLE CONDITION AS RE	CEIVED (lab use only)	
Drinking Water (DW) Samples ¹ (client use)	(electronic COC only)	Frozen SIF Observations	Yes No	
re samples taken from a Regulated DW System?		Ice Packs 🔲 Ice Cubes 🔲 Custody seal intact	Yes 🔲 No	
YES NO	SHORT HOLD TIMES NO2/NO3	Cooling Initiated		
re samples for human consumption/ use?		INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERA	TURES °C
□ YES □ NO			3 7	3

INITIAL SHIPMENT RECEPTION (lab use only)

Date

Released by: June 26/19 /3!œ REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY

Received by:

Time:

SHIPMENT RELEASE (client use)

YELLOW CLIENT COPY

Received by:

K

Time:

FINAL SHIPMENT RECEPTION (lab use only)

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

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 28-JUN-19

Report Date: 08-JUL-19 16:34 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2300898 Project P.O. #: 73515713

Project P.O. #: 73515713 Job Reference: 056484-52

C of C Numbers: 17-WG-56484-260619

Legal Site Desc:

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L2300898 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-1 WG-56484-260619-CT-18 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 10: Matrix: WG	15						
Physical Tests							
Conductivity	477		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	233		0.50	mg/L		03-JUL-19	
pH	8.00		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	245		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	235		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	235		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	4.35		0.13	mg/L		02-JUL-19	R4692694
Chloride (CI)	17.1		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.0784		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.0447		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	0.0337		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	4.61		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals				3.			
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (AI)-Dissolved	0.0210		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00070		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.0103		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	0.147		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	0.0000320		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	79.9		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	0.00040		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	0.00263		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	0.262		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	0.000055		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	8.19		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	2.47		0.0030	mg/L	28-JUN-19	29-JUN-19	R4692102
Mercury (Hg)-Dissolved	<0.000050		0.00010	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000557		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	0.000557		0.00050	mg/L	28-JUN-19	29-JUN-19 29-JUN-19	R4692102
` '				•			
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	4.82		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2300898-1 WG-56484-260619-CT-18 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 10:1 Matrix: WG	15						
Dissolved Metals							
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	7.33		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	20.2		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.236		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	1.22		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000135		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	0.0068		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
				3			
Physical Tests							
Conductivity	387		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	179		0.50	mg/L		03-JUL-19	
pH	8.23		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	232		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	182		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	182		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	2.61		0.13	mg/L		02-JUL-19	R4692694
Chloride (CI)	20.7		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	0.027		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.89		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals				-			
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (AI)-Dissolved	0.0049		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00183		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00929		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Delyman (De) Dissolved							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-2 WG-56484-260619-CT-19							
Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 10::/ Matrix: WG	20						
Dissolved Metals							
Boron (B)-Dissolved	0.071		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	0.0000163		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	61.9		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	0.268		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	6.04		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	1.01		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000312		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	0.00052		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	3.15		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	6.84		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	11.8		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.156		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	0.69		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000095		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-3 WG-56484-260619-CT-20 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 11:0	po						
Matrix: WG							
Physical Tests							
Conductivity	231		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	129		0.50	mg/L		03-JUL-19	
pH	8.20		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	159		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients	404		4.0			00 11 11 40	D 4004005
Alkalinity, Bicarbonate (as CaCO3)	121		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L			R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	121		1.0	mg/L		29-JUN-19	R4691805

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-3 WG-56484-260619-CT-20 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 11:0 Matrix: WG	00						
Anions and Nutrients							
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	4.60		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.807		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.807		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.11		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals				· ·			
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (Al)-Dissolved	0.0038		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00628		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	0.025		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	34.5		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00236		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	10.3		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	03-JUL-19	R4692628
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000060		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	< 0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	< 0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	0.452		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	0.000118		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	8.50		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	4.45		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.0644		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	< 0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-3 WG-56484-260619-CT-20 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 11:0 Matrix: WG	00						
Dissolved Metals							
Uranium (U)-Dissolved	0.000172		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.00328		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-4 WG-56484-260619-CT-21 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 12:0 Matrix: WG	5						
Physical Tests							
Conductivity	82.9		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	39.3		0.50	mg/L		03-JUL-19	
рН	7.85		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	58		13	mg/L		03-JUL-19	R4693686
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	40.2		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	40.2		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	0.83		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	0.021		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.0487		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.0487		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.55		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (AI)-Dissolved	0.0054		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00065		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00065		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	< 0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	<0.010		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	0.0000057		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	12.2		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00097		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	0.00117		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	0.023		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	0.000160		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-4 WG-56484-260619-CT-21 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 12:0 WG WG	05						
Dissolved Metals							
Magnesium (Mg)-Dissolved	2.16		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	0.00102		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000302		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	0.285		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	0.000130		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	5.54		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	1.55		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.0189		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000012		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.00535		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	0.0093		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-5 WG-56484-260619-CT-22 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 12:2 Matrix: WG	20			· ·			
Physical Tests							
Conductivity	<2.0		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	<0.50		0.50	mg/L		03-JUL-19	
рН	5.63		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids Anions and Nutrients	<10		10	mg/L		03-JUL-19	R4693686
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	<0.50		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	<0.30		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983

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

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2300898-5 WG-56484-260619-CT-22 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 12: Matrix: WG	20					
Dissolved Metals						
Dissolved Metals Filtration Location	FIELD				28-JUN-19	R4690662
Aluminum (AI)-Dissolved	<0.0010	0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050	0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	<0.010	0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	<0.0000050	0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	<0.050	0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	<0.00020	0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	<0.010	0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050	0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010	0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	<0.0050	0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	03-JUL-19	R4692628
Mercury (Hg)-Dissolved	<0.0000050	0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	<0.000050	0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	<0.00050	0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050	0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	<0.050	0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	<0.000050	0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	<0.050	0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010	0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	<0.050	0.050	mg/L	28-JUN-19		R4692102
Strontium (Sr)-Dissolved	<0.00020	0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	<0.50	0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010	0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010	0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030	0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	<0.000010	0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	<0.00050	0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010	0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020	0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-6 WG-56484-260619-CT-23 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 14: Matrix: WG	 					
Physical Tests						
Conductivity	553	2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	156	0.50	mg/L		03-JUL-19	

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-6 WG-56484-260619-CT-23 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 14:0 Matrix: WG	0						
Physical Tests							
pH	8.09		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	292		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients				· ·			
Alkalinity, Bicarbonate (as CaCO3)	259		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	259		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	11.8		0.25	mg/L		02-JUL-19	R4692694
Chloride (CI)	27.6		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	< 0.050	DLCI	0.050	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	< 0.0051		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	< 0.0050		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	3.02		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (Al)-Dissolved	0.0062		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00025		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.0253		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	0.546		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	0.0000846		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	46.9		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	0.00118		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	0.0143		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	0.028		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	9.42		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	1.91		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Mercury (Hg)-Dissolved	0.0000067		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000857		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	0.00239		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	11.3		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	<0.00050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	14.2		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-6 WG-56484-260619-CT-23 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 14:0 Matrix: WG	0						
Dissolved Metals							
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	42.0		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.231		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	0.75		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (Tl)-Dissolved	<0.00010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000255		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.00169		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-7 WG-56484-260619-CT-24 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 15:0 Matrix: WG			0.00020	g/ _	20 0011 10	20 0011 10	114032102
Physical Tests							
Conductivity	140		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	75.5		0.50	mg/L		03-JUL-19	
pH	8.09		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	88		13	mg/L		03-JUL-19	R4693686
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	71.9		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	71.9		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		02-JUL-19	R4692694
Chloride (CI)	1.31		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.138		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.138		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	2.86		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals				Ü			
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (Al)-Dissolved	0.0058		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00251		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00348		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	<0.010		0.010	mg/L	28-JUN-19	03-JUL-19	R4692628
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted Analyzed		Batch
L2300898-7 WG-56484-260619-CT-24							
Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 15:	ФО						
Matrix: WG Dissolved Metals							
Calcium (Ca)-Dissolved	24.4		0.050	ma/l	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00058		0.050 0.00010	mg/L mg/L	28-JUN-19	29-JUN-19 29-JUN-19	R4692102 R4692102
Cobalt (Co)-Dissolved	<0.00038		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	<0.010		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.00050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	3.54		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	03-JUL-19	R4692628
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000139		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	1.25		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	0.000170		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	5.43		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	1.34		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.0281		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	0.55		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000098		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.0228		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-8 WG-56484-260619-CT-25 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 16: Matrix: WG	30						
Physical Tests							
Conductivity	228		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	130		0.50	mg/L		03-JUL-19	
pH	8.24		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	141		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients				,,			
Alkalinity, Bicarbonate (as CaCO3)	121		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	121		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	2.59		0.50	mg/L		29-JUN-19	R4692125

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-8 WG-56484-260619-CT-25 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 16:\$ Matrix: WG	30						
Anions and Nutrients							
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.249		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.249		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	3.06		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (Al)-Dissolved	0.0047		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00080		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00232		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	<0.010		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	42.8		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00042		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	0.00029		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	< 0.010		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	5.71		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	0.00017		0.00010	mg/L	28-JUN-19	03-JUL-19	R4692628
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000114		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	< 0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	0.870		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	0.000105		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	6.12		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	2.24		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.0637		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	0.67		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000086		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.00541		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-8 WG-56484-260619-CT-25 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 16:30 Matrix: WG)						
Dissolved Metals							
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.0013		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
L2300898-9 WG-56484-260619-CT-26 Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 17:00 Matrix: WG			0.00020	g, <u>_</u>	20 0011 10	20 0011 10	114002102
Physical Tests							
Conductivity	299		2.0	uS/cm		29-JUN-19	R4691805
Hardness (as CaCO3)	164		0.50	mg/L		03-JUL-19	
рН	8.18		0.10	рН		29-JUN-19	R4691805
Total Dissolved Solids	196		20	mg/L		03-JUL-19	R4693686
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	133		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JUN-19	R4691805
Alkalinity, Total (as CaCO3)	133		1.0	mg/L		29-JUN-19	R4691805
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		30-JUN-19	R4691897
Chloride (CI)	10.5		0.50	mg/L		29-JUN-19	R4692125
Fluoride (F)	<0.020		0.020	mg/L		29-JUN-19	R4692125
Nitrate and Nitrite (as N)	0.408		0.0051	mg/L		04-JUL-19	
Nitrate (as N)	0.369		0.0050	mg/L		29-JUN-19	R4692125
Nitrite (as N)	0.0386		0.0010	mg/L		29-JUN-19	R4692125
Sulfate (SO4)	14.3		0.30	mg/L		29-JUN-19	R4692125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-JUL-19	R4691983
Dissolved Metals Filtration Location	FIELD					28-JUN-19	R4690662
Aluminum (Al)-Dissolved	0.0062		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Barium (Ba)-Dissolved	0.00431		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Boron (B)-Dissolved	0.081		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Calcium (Ca)-Dissolved	48.6		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Chromium (Cr)-Dissolved	0.00146		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Copper (Cu)-Dissolved	0.00036		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	28-JUN-19	29-JUN-19	R4692102
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Magnesium (Mg)-Dissolved	10.4		0.0050	mg/L	28-JUN-19	29-JUN-19	R4692102
Manganese (Mn)-Dissolved	0.00932		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2300898-9 WG-56484-260619-CT-26							
Sampled By: C. Thorne/ M. Dyke on 26-JUN-19 @ 17:	o						
Matrix: WG							
Dissolved Metals	0.000050		0.0000050	//	00 1111 40	00 1111 40	D 4000000
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4692983
Molybdenum (Mo)-Dissolved	0.000069		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Potassium (K)-Dissolved	0.717		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Selenium (Se)-Dissolved	0.000098		0.000050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silicon (Si)-Dissolved	6.68		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Sodium (Na)-Dissolved	5.30		0.050	mg/L	28-JUN-19	29-JUN-19	R4692102
Strontium (Sr)-Dissolved	0.102		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
Sulfur (S)-Dissolved	4.68		0.50	mg/L	28-JUN-19	29-JUN-19	R4692102
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-JUN-19	29-JUN-19	R4692102
Titanium (Ti)-Dissolved	0.00037		0.00030	mg/L	28-JUN-19	29-JUN-19	R4692102
Uranium (U)-Dissolved	0.000288		0.000010	mg/L	28-JUN-19	29-JUN-19	R4692102
Vanadium (V)-Dissolved	0.00484		0.00050	mg/L	28-JUN-19	29-JUN-19	R4692102
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	28-JUN-19	29-JUN-19	R4692102
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	28-JUN-19	29-JUN-19	R4692102
* Peter to Peteropood Information for Qualifiers (if any) appear							

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2300898-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2300898-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2300898-1, -2, -3, -4, -5, -6, -7, -8, -9

Sample Parameter Qualifier key listed:

 Qualifier
 Description

 DLCI
 Detection Limit Raised: Chromatographic Interference due to co-elution.

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-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbin Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity wher had uired during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), p@s6\\delta it hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), pleaseMed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

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

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

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires and Dissolved Form 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.

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

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Reference Information

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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

17-WG-56484-260619

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.



Workorder: L2300898 Report Date: 08-JUL-19 Page 1 of 9

GHD Limited Client:

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R4691805 WG3092044-3 CRM Alkalinity, Total (as CaC	:O3)	VA-ALK-TITR-	CONTROL 102.3		%		85-115	29-JUN-19
WG3092044-5 DUP Alkalinity, Total (as CaC	O3)	L2300903-1 38.1	38.6		mg/L	1.3	20	29-JUN-19
WG3092044-1 MB Alkalinity, Total (as CaC	:O3)		<1.0		mg/L		1	29-JUN-19
CL-IC-N-VA	Water							
Batch R4692125								
WG3092059-3 DUP Chloride (CI)		L2300035-6 <0.50	<0.50	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3092059-2 LCS Chloride (Cl)			94.9		%		90-110	29-JUN-19
WG3092059-1 MB Chloride (CI)			<0.50		mg/L		0.5	29-JUN-19
WG3092059-4 MS Chloride (CI)		L2300004-1	100.2		%		75-125	29-JUN-19
EC-PCT-VA	Water							
Batch R4691805 WG3092044-4 CRM		VA-EC-PCT-C	ONTROL					
Conductivity			100.0		%		90-110	29-JUN-19
WG3092044-5 DUP Conductivity		L2300903-1 456	456		uS/cm	0.0	10	29-JUN-19
WG3092044-1 MB Conductivity			<2.0		uS/cm		2	29-JUN-19
F-IC-N-VA	Water							
Batch R4692125								
WG3092059-3 DUP Fluoride (F)		L2300035-6 <0.020	<0.020	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3092059-2 LCS Fluoride (F)			94.4		%		90-110	29-JUN-19
WG3092059-1 MB Fluoride (F)			<0.020		mg/L		0.02	29-JUN-19
HG-D-CVAA-VA	Water							
Batch R4692983 WG3093487-7 DUP Mercury (Hg)-Dissolved		L2300898-1 <0.000050	<0.000005	C RPD-NA	mg/L	N/A	20	03-JUL-19
WG3093487-6 LCS								



Workorder: L2300898 Report Date: 08-JUL-19 Page 2 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4692983 WG3093487-6 LCS Mercury (Hg)-Dissolved			102.6		%		80-120	03-JUL-19
WG3093487-5 MB Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-JUL-19
WG3093487-8 MS Mercury (Hg)-Dissolved		L2300620-1	92.8		%		70-130	03-JUL-19
MET-D-CCMS-VA	Water							
Batch R4692102								
WG3091841-3 DUP Aluminum (Al)-Dissolved	i	L2300618-1 0.0036	0.0036		mg/L	0.7	20	29-JUN-19
Antimony (Sb)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-JUN-19
Arsenic (As)-Dissolved		0.00079	0.00077		mg/L	2.4	20	29-JUN-19
Barium (Ba)-Dissolved		0.0175	0.0170		mg/L	2.8	20	29-JUN-19
Beryllium (Be)-Dissolved	i	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-JUN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-JUN-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-JUN-19
Cadmium (Cd)-Dissolve	d	0.0000712	0.0000703		mg/L	1.3	20	29-JUN-19
Calcium (Ca)-Dissolved		32.4	31.0		mg/L	4.5	20	29-JUN-19
Chromium (Cr)-Dissolve	d	0.00036	0.00036		mg/L	1.4	20	29-JUN-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-JUN-19
Copper (Cu)-Dissolved		0.00020	0.00021		mg/L	1.4	20	29-JUN-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-JUN-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-JUN-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-JUN-19
Magnesium (Mg)-Dissol	ved	1.54	1.50		mg/L	2.5	20	29-JUN-19
Manganese (Mn)-Dissol	ved	0.00025	0.00021		mg/L	20	20	29-JUN-19
Molybdenum (Mo)-Disso	lved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-JUN-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-JUN-19
Phosphorus (P)-Dissolve	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-JUN-19
Potassium (K)-Dissolved	d	0.622	0.590		mg/L	5.3	20	29-JUN-19
Selenium (Se)-Dissolved	d	0.000070	0.000074		mg/L	6.0	20	29-JUN-19
Silicon (Si)-Dissolved		5.86	5.75		mg/L	1.9	20	29-JUN-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-JUN-19
Sodium (Na)-Dissolved		1.66	1.60		mg/L	3.3	20	29-JUN-19



Workorder: L2300898 Report Date: 08-JUL-19 Page 3 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4692102								
WG3091841-3 DUP		L2300618-1			4			
Strontium (Sr)-Dissolved	1	0.103	0.100		mg/L	2.6	20	29-JUN-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	29-JUN-19
Thallium (TI)-Dissolved		<0.000010	<0.000010	=	mg/L	N/A	20	29-JUN-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-JUN-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	29-JUN-19
Uranium (U)-Dissolved		0.000027	0.000024		mg/L	14	20	29-JUN-19
Vanadium (V)-Dissolved	l	0.00074	0.00071		mg/L	3.1	20	29-JUN-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-JUN-19
Zirconium (Zr)-Dissolved	t	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3091841-2 LCS Aluminum (Al)-Dissolved	1		103.3		%		00.400	00 11111 40
Antimony (Sb)-Dissolved			100.5		%		80-120	29-JUN-19
Arsenic (As)-Dissolved	ı		100.5		%		80-120	29-JUN-19
Barium (Ba)-Dissolved			103.4		%		80-120	29-JUN-19
Beryllium (Be)-Dissolved	1		93.9		%		80-120	29-JUN-19
Bismuth (Bi)-Dissolved	1		105.7		%		80-120	29-JUN-19
Boron (B)-Dissolved			96.4		%		80-120	29-JUN-19
Cadmium (Cd)-Dissolved	d		100.7		%		80-120	29-JUN-19
Calcium (Ca)-Dissolved	u		98.4		%		80-120	29-JUN-19
·	d				%		80-120	29-JUN-19
Chromium (Cr)-Dissolve	eu		107.0		%		80-120	29-JUN-19
Cobalt (Co)-Dissolved			103.3				80-120	29-JUN-19
Copper (Cu)-Dissolved			101.7		%		80-120	29-JUN-19
Iron (Fe)-Dissolved			89.8		%		80-120	29-JUN-19
Lead (Pb)-Dissolved			97.2		%		80-120	29-JUN-19
Lithium (Li)-Dissolved	un d		97.2		%		80-120	29-JUN-19
Magnesium (Mg)-Dissolv			109.6		%		80-120	29-JUN-19
Manganese (Mn)-Dissolv			104.9		%		80-120	29-JUN-19
Molybdenum (Mo)-Disso	oivea		103.5		%		80-120	29-JUN-19
Nickel (Ni)-Dissolved	a d		104.1		%		80-120	29-JUN-19
Phosphorus (P)-Dissolve			106.4		%		70-130	29-JUN-19
Potassium (K)-Dissolved			112.1		%		80-120	29-JUN-19
Selenium (Se)-Dissolved	ג		101.0		%		80-120	29-JUN-19
Silicon (Si)-Dissolved			99.7		%		60-140	29-JUN-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Batch R4992102 W33091841-2 LCS Silver (Ag)-Dissolved 104.2 % 80-120 29-JUN-19 29-JUN-19 29-JUN-19 30-JUN-1	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Silver (Ag)-Dissolved 104.2 % 80.120 29.JUN-19 Sodium (Na)-Dissolved 104.8 % 80.120 29.JUN-19 Strontium (Sr)-Dissolved 102.1 % 80.120 29.JUN-19 Strontium (Sr)-Dissolved 88.4 % 80.120 29.JUN-19 Thallium (Th)-Dissolved 98.9 % 80.120 29.JUN-19 Thallium (Th)-Dissolved 101.8 % 80.120 29.JUN-19 Titanium (Th)-Dissolved 101.8 % 80.120 29.JUN-19 Titanium (Th)-Dissolved 100.7 % 80.120 29.JUN-19 Titanium (Th)-Dissolved 100.7 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 94.5 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 103.5 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 103.5 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 106.0 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 106.0 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 94.6 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 94.6 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 94.6 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 94.6 % 80.120 29.JUN-19 Vanadium (Vh)-Dissolved 40.0010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.0010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.0001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.0001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.0001 29.JUN-19 Vanadium (Vh)-Dissolved 40.000050 mg/L 0.0001 29.JUN-19 Vanadium (Vh)-Dissolved 40.000060 mg/L 0.0001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.001 29.JUN-19 Vanadium (Vh)-Dissolved 40.00010 mg/L 0.0005 29.JUN-19 Vanadium (Vh)-Dissolved	MET-D-CCMS-VA	Water							
Silver (Ag)-Dissolved 104.2 % 80-120 29-JUN-19 Sodium (Na)-Dissolved 104.8 % 80-120 29-JUN-19 Strontium (St)-Dissolved 102.1 % 80-120 29-JUN-19 Sulfur (S)-Dissolved 88.4 % 80-120 29-JUN-19 Sulfur (S)-Dissolved 88.4 % 80-120 29-JUN-19 Thallium (T)-Dissolved 98.9 % 80-120 29-JUN-19 Tim (Sn)-Dissolved 101.8 % 80-120 29-JUN-19 Tim (Tim (T)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Uranium (U)-Dissolved 103.5 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 % 80-120 29-JUN-19 Uranium (Na)-Dissolved 94.0 94.6 94.0 94.6 94.0 94.6 94.0 94.6 94.0 94.6 94.0 94.6 94.0 94.6 94.0 94.0 94.6 94.0 94	Batch R4692102								
Sodium (Na)-Dissolved				104.2		0/_		90.420	00 11111 40
Strontium (Sr)-Dissolved 102.1 % 80-120 29-JUN-19 Sulfur (S)-Dissolved 88.4 % 80-120 29-JUN-19 Thalium (TI)-Dissolved 98.9 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 101.8 % 80-120 29-JUN-19 Titanium (TI)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Zinco (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinco (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (RJ)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (RJ)-Dissolved <0.0010									
Sulfur (S)-Dissolved 88.4 % 80-120 29-JUN-19 Thallum (T)-Dissolved 88.9 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 101.8 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (Ti)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (Ti)-Dissolved 103.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (A)-Dissolved 0,00010 mg/L 0,001 29-JUN-19 Antimory (Sb)-Dissolved 0,00010 mg/L 0,001 29-JUN-19 Barium (Ba)-Dissolved 0,00010 mg/L 0,0001 29-JUN-19 Barium (Ba)-Dissolved 0,00010 mg/L 0,0001 29-JUN-19 Beryllium (Ba)-Dissolved 0,00010 mg/L 0,0001 29-JUN-19 Beryllium (Ba)-Dissolved 0,00010 mg/L 0,0001 29-JUN-19 Beryllium (Ba)-Dissolved 0,000050 mg/L 0,0001 29-JUN-19 Cadrium (Cd)-Dissolved 0,000050 mg/L 0,000 29-JUN-19 Cadrium (Cd)-Dissolved 0,000050 mg/L 0,000 29-JUN-19 Cadrium (Cd)-Dissolved 0,000050 mg/L 0,000 29-JUN-19 Cadrium (Cd)-Dissolved 0,000050 mg/L 0,000 29-JUN-19 Cadrium (Ch)-Dissolved 0,000050 mg/L 0,000 29-JUN-19 Cobalt (Co)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Copatr (Co)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,00000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19 Iron (Fe)-Dissolved 0,0000 mg/L 0,000 29-JUN-19		d							
Thallium (TI)-Dissolved 101.8 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 101.8 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 100.7 % 80-120 29-JUN-19 Tin (Sn)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 103.5 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.0001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.0001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.0001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 000050 mg/L 0.000050 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.001 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00010 mg/L 0.000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.00000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.0000 29-JUN-19 Zinc (Zn)-Dissolved 94.0 00000 mg/L 0.0000 29-JU	` '	u							
Tin (Sn)-Dissolved 101.8 % 80-120 29-JUN-19 Titanium (Ti)-Dissolved 100.7 % 80-120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 29-JUN-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (A)-Dissolved <0.0010 mg/L 0.001 29-JUN-19 Antimory (Sb)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Be)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Be)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Bismuth (Bi)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Bismuth (Bi)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19 Cadmium (Cd)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19 Cadmium (Ca)-Dissolved <0.0000 mg/L 0.000 29-JUN-19 Calcium (Ca)-Dissolved <0.00010 mg/L 0.001 29-JUN-19 Chromium (Cr)-Dissolved <0.00010 mg/L 0.001 29-JUN-19 Chromium (Cr)-Dissolved <0.00010 mg/L 0.000 29-JUN-19 Copar (Cu)-Dissolved <0.00010 mg/L 0.000 29-JUN-19 Lead (Pb)-Dissolved <0.00010 mg/L 0.000 29-JUN-19 Lead (Pb)-Dissolved <0.00010 mg/L 0.001 29-JUN-19 Lead (Pb)-Dissolved <0.000050 mg/L 0.0002 29-JUN-19 Lithium (Li)-Dissolved <0.00050 mg/L 0.0002 29-JUN-19 Magnesium (Mg)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Magnesium (Mg)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Mickel (Ni)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Mickel (Ni)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved <0.0050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved <0.0050 mg/L 0.0005 29-JUN-19	` ,								
Titanium (Ti)-Dissolved 100.7 % 80.120 29-JUN-19 Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zirconium (Zi)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (A)-Dissolved < 0.0010 mg/L 0.001 29-JUN-19 Arisenic (As)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Barium (Ba)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Barium (Ba)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Ba)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Ba)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Ba)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Cadmium (Cd)-Dissolved < 0.000050 mg/L 0.00005 29-JUN-19 Boron (B)-Dissolved < 0.000050 mg/L 0.00005 29-JUN-19 Cadmium (Cd)-Dissolved < 0.000050 mg/L 0.00005 29-JUN-19 Calcium (Ca)-Dissolved < 0.000050 mg/L 0.05 29-JUN-19 Calcium (Ca)-Dissolved < 0.00010 mg/L 0.001 29-JUN-19 Cobalt (Co)-Dissolved < 0.00010 mg/L 0.05 29-JUN-19 Cobalt (Co)-Dissolved < 0.00010 mg/L 0.05 29-JUN-19 Cobalt (Co)-Dissolved < 0.00010 mg/L 0.000 29-JUN-19 Copper (Cu)-Dissolved < 0.00010 mg/L 0.000 29-JUN-19 Lithium (Li)-Dissolved < 0.00010 mg/L 0.0001 29-JUN-19 Lithium (Li)-Dissolved < 0.00010 mg/L 0.001 29-JUN-19 Lithium (Li)-Dissolved < 0.00010 mg/L 0.001 29-JUN-19 Magnesium (Mg)-Dissolved < 0.00010 mg/L 0.001 29-JUN-19 Magnesium (Mg)-Dissolved < 0.00010 mg/L 0.0005 29-JUN-19 Magnesium (Mg)-Dissolved < 0.00010 mg/L 0.0005 29-JUN-19 Magnesium (Mg)-Dissolved < 0.00010 mg/L 0.0005 29-JUN-19 Molybdenum (Mg)-Dissolved < 0.00050 mg/L 0.0005 29-JUN-19 Molybdenum (Mg)-Dissolved < 0.00050 mg/L 0.0005 29-JUN-19 Molybdenum (Mg)-Dissolved < 0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved < 0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved < 0.00050 mg/L 0.0005 29-JUN-19	,								
Uranium (U)-Dissolved 94.5 % 80-120 29-JUN-19 Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Ziroc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Ziroconium (Zr)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (Al)-Dissolved <0.0010									
Vanadium (V)-Dissolved 103.5 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zinc (Zn)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB MB MB Aluminum (Al)-Dissolved -0.0010 mg/L 0.001 29-JUN-19 Antimony (Sb)-Dissolved <0.00010									
Zinc (Zn)-Dissolved 106.0 % 80-120 29-JUN-19 Zirconium (Zr)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB N.001 mg/L 0.001 29-JUN-19 Antimony (Sb)-Dissolved <0.00010	` '	٨							
Zirconium (Zr)-Dissolved 94.6 % 80-120 29-JUN-19 WG3091841-1 MB Aluminum (Al)-Dissolved <0.0010 mg/L 0.001 29-JUN-19 Antimony (Sb)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Arsenic (As)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Barium (Ba)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Be)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Beryllium (Be)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19 Boron (B)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19 Boron (B)-Dissolved <0.010 mg/L 0.00005 29-JUN-19 Cadmium (Cd)-Dissolved <0.050 mg/L 0.00005 29-JUN-19 Calcium (Ca)-Dissolved <0.050 mg/L 0.0001 29-JUN-19 Chromium (C1)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Chromium (C2)-Dissolved <0.00010 mg/L 0.0001 29-JUN		J							
WG3091841-1 MB MB Aluminum (Al)-Dissolved <0.0010	` '	d							
Aluminum (Al)-Dissolved <0.0010 mg/L 0.001 29-JUN-19 Antimony (Sb)-Dissolved <0.00010		u		94.0		76		80-120	29-JUN-19
Antimony (Sb)-Dissolved		d		<0.0010		mg/L		0.001	29-JUN-19
Arsenic (As)-Dissolved <0.00010	` '			<0.00010		•		0.0001	
Barium (Ba)-Dissolved <0.00010				<0.00010		mg/L		0.0001	
Beryllium (Be)-Dissolved <0.00010	Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	
Bismuth (Bi)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19 Boron (B)-Dissolved <0.010	Beryllium (Be)-Dissolve	d		<0.00010		mg/L		0.0001	
Boron (B)-Dissolved <0.010	Bismuth (Bi)-Dissolved			<0.00005	0	mg/L		0.00005	
Cadmium (Cd)-Dissolved <0.000005C mg/L 0.000005 29-JUN-19 Calcium (Ca)-Dissolved <0.050	Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JUN-19
Calcium (Ca)-Dissolved <0.050	Cadmium (Cd)-Dissolve	ed		<0.00000	5C	mg/L		0.000005	29-JUN-19
Chromium (Cr)-Dissolved <0.00010 mg/L 0.0001 29-JUN-19 Cobalt (Co)-Dissolved <0.00010	Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	
Copper (Cu)-Dissolved <0.00020 mg/L 0.0002 29-JUN-19 Iron (Fe)-Dissolved <0.010	Chromium (Cr)-Dissolve	ed		<0.00010		mg/L		0.0001	
Iron (Fe)-Dissolved <0.010	Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JUN-19
Lead (Pb)-Dissolved <0.000050	Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JUN-19
Lithium (Li)-Dissolved <0.0010	Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JUN-19
Magnesium (Mg)-Dissolved <0.0050	Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	29-JUN-19
Magnesium (Mg)-Dissolved <0.0050	Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JUN-19
Molybdenum (Mo)-Dissolved <0.000050	Magnesium (Mg)-Disso	lved		<0.0050		mg/L		0.005	
Nickel (Ni)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved <0.050	Manganese (Mn)-Disso	lved		<0.00010		mg/L		0.0001	29-JUN-19
Nickel (Ni)-Dissolved <0.00050 mg/L 0.0005 29-JUN-19 Phosphorus (P)-Dissolved <0.050	Molybdenum (Mo)-Disse	olved		<0.00005	0	mg/L		0.00005	
Phosphorus (P)-Dissolved <0.050 mg/L 0.05 29-JUN-19 Potassium (K)-Dissolved <0.050	Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	
	Phosphorus (P)-Dissolv	red		< 0.050		mg/L		0.05	
Selenium (Se)-Dissolved <0.000050 mg/L 0.00005 29-JUN-19	Potassium (K)-Dissolve	d		< 0.050		mg/L		0.05	29-JUN-19
	Selenium (Se)-Dissolve	d		<0.00005	0	mg/L		0.00005	



Workorder: L2300898 Report Date: 08-JUL-19 Page 5 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4692102								
WG3091841-1 MB Silicon (Si)-Dissolved			<0.050		ma/l		0.05	00 11 11 140
Silver (Ag)-Dissolved			<0.00010		mg/L mg/L		0.00001	29-JUN-19 29-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JUN-19 29-JUN-19
Strontium (Sr)-Dissolved	I		<0.00020		mg/L		0.0002	
Sulfur (S)-Dissolved	•		<0.50		mg/L		0.5	29-JUN-19
Thallium (TI)-Dissolved			<0.000010		mg/L		0.00001	29-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0001	29-JUN-19
Uranium (U)-Dissolved			<0.00030	1	mg/L		0.0003	29-JUN-19
Vanadium (V)-Dissolved	l		<0.00050	•	mg/L		0.0005	29-JUN-19 29-JUN-19
Zinc (Zn)-Dissolved	!		<0.0010		mg/L		0.0003	
Zirconium (Zr)-Dissolved	1		<0.00020		mg/L		0.0002	29-JUN-19 29-JUN-19
WG3091841-4 MS	4	L2300618-2	<0.00020		mg/L		0.0002	29-JUN-19
Aluminum (Al)-Dissolved	d	L2300010-2	101.3		%		70-130	29-JUN-19
Antimony (Sb)-Dissolved	d		99.9		%		70-130	29-JUN-19
Arsenic (As)-Dissolved			105.8		%		70-130	29-JUN-19
Barium (Ba)-Dissolved			94.2		%		70-130	29-JUN-19
Beryllium (Be)-Dissolved	ł		99.0		%		70-130	29-JUN-19
Bismuth (Bi)-Dissolved			93.2		%		70-130	29-JUN-19
Boron (B)-Dissolved			96.5		%		70-130	29-JUN-19
Cadmium (Cd)-Dissolved	d		111.3		%		70-130	29-JUN-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	29-JUN-19
Chromium (Cr)-Dissolve	d		105.7		%		70-130	29-JUN-19
Cobalt (Co)-Dissolved			101.4		%		70-130	29-JUN-19
Copper (Cu)-Dissolved			102.7		%		70-130	29-JUN-19
Iron (Fe)-Dissolved			97.3		%		70-130	29-JUN-19
Lead (Pb)-Dissolved			96.5		%		70-130	29-JUN-19
Lithium (Li)-Dissolved			104.1		%		70-130	29-JUN-19
Magnesium (Mg)-Dissolv	ved		N/A	MS-B	%		-	29-JUN-19
Manganese (Mn)-Dissolv	ved		102.7		%		70-130	29-JUN-19
Molybdenum (Mo)-Disso	olved		100.4		%		70-130	29-JUN-19
Nickel (Ni)-Dissolved			103.9		%		70-130	29-JUN-19
Phosphorus (P)-Dissolve	ed		104.4		%		70-130	29-JUN-19
Potassium (K)-Dissolved	d		112.7		%		70-130	29-JUN-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4692102 WG3091841-4 MS Selenium (Se)-Dissolved	i	L2300618-2	109.5		%		70-130	29-JUN-19
Silicon (Si)-Dissolved			112.7		%		70-130	29-JUN-19
Silver (Ag)-Dissolved			101.4		%		70-130	29-JUN-19
Sodium (Na)-Dissolved			94.6		%		70-130	29-JUN-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	29-JUN-19
Sulfur (S)-Dissolved			108.1		%		70-130	29-JUN-19
Thallium (TI)-Dissolved			95.2		%		70-130	29-JUN-19
Tin (Sn)-Dissolved			99.8		%		70-130	29-JUN-19
Titanium (Ti)-Dissolved			104.6		%		70-130	29-JUN-19
Uranium (U)-Dissolved			91.4		%		70-130	29-JUN-19
Vanadium (V)-Dissolved			102.1		%		70-130	29-JUN-19
Zinc (Zn)-Dissolved			106.9		%		70-130	29-JUN-19
Zirconium (Zr)-Dissolved	I		92.8		%		70-130	29-JUN-19
NH3-F-VA	Water							
Batch R4691897								
WG3091853-3 DUP Ammonia, Total (as N)		L2299932-3 0.285	0.298		mg/L	4.2	20	30-JUN-19
WG3091853-2 LCS Ammonia, Total (as N)			97.8		%		85-115	30-JUN-19
WG3091853-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	30-JUN-19
Batch R4692694 WG3093886-3 DUP		L2300898-7						
Ammonia, Total (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-JUL-19
WG3093886-4 MS Ammonia, Total (as N)		L2300898-7	97.4		%		75-125	02-JUL-19
NO2-L-IC-N-VA	Water							
Batch R4692125								
WG3092059-3 DUP Nitrite (as N)		L2300035-6 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3092059-2 LCS Nitrite (as N)			93.8		%		90-110	29-JUN-19
WG3092059-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	29-JUN-19
WG3092059-4 MS		L2300004-1						



Workorder: L2300898 Report Date: 08-JUL-19 Page 7 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-VA	Water							
Batch R4692125 WG3092059-4 MS Nitrite (as N)		L2300004-1	98.4		%		75-125	29-JUN-19
NO3-L-IC-N-VA	Water							
Batch R4692125 WG3092059-3 DUP Nitrate (as N)		L2300035-6 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	29-JUN-19
WG3092059-2 LCS Nitrate (as N)			96.6		%		90-110	29-JUN-19
WG3092059-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	29-JUN-19
WG3092059-4 MS Nitrate (as N)		L2300004-1	101.8		%		75-125	29-JUN-19
PH-PCT-VA	Water							
Batch R4691805 WG3092044-2 CRM pH		VA-PH7-BUF	7.01		рН		6.9-7.1	29-JUN-19
WG3092044-5 DUP pH		L2300903-1 7.54	7.55	J	рН	0.01	0.3	29-JUN-19
SO4-IC-N-VA	Water							
Batch R4692125 WG3092059-3 DUP Sulfate (SO4) WG3092059-2 LCS		L2300035-6 <0.30	<0.30	RPD-NA	mg/L	N/A	20	29-JUN-19
Sulfate (SO4) WG3092059-1 MB			95.9		%		90-110	29-JUN-19
Sulfate (SO4)			<0.30		mg/L		0.3	29-JUN-19
WG3092059-4 MS Sulfate (SO4)		L2300004-1	99.3		%		75-125	29-JUN-19
TDS-VA	Water							
Batch R4693686 WG3093927-12 DUP Total Dissolved Solids		L2300808-9 334	330		mg/L	1.4	20	03-JUL-19
WG3093927-11 LCS Total Dissolved Solids			100.9		%		85-115	03-JUL-19
WG3093927-10 MB Total Dissolved Solids			<10		mg/L		10	03-JUL-19

Workorder: L2300898 Report Date: 08-JUL-19

Client: GHD Limited Page 8 of 9

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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.

Workorder: L2300898 Report Date: 08-JUL-19

Client: GHD Limited

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Page 9 of 9

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	26-JUN-19 10:15	29-JUN-19 10:01	0.25	72	hours	EHTR-FM
	2	26-JUN-19 10:20	29-JUN-19 10:01	0.25	72	hours	EHTR-FM
	3	26-JUN-19 11:00	29-JUN-19 10:01	0.25	71	hours	EHTR-FM
	4	26-JUN-19 12:05	29-JUN-19 10:01	0.25	70	hours	EHTR-FM
	5	26-JUN-19 12:20	29-JUN-19 10:01	0.25	70	hours	EHTR-FM
	6	26-JUN-19 14:00	29-JUN-19 10:01	0.25	68	hours	EHTR-FM
	7	26-JUN-19 15:00	29-JUN-19 10:01	0.25	67	hours	EHTR-FM
	8	26-JUN-19 16:30	29-JUN-19 10:01	0.25	66	hours	EHTR-FM
	9	26-JUN-19 17:00	29-JUN-19 10:01	0.25	65	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2300898 were received on 28-JUN-19 10:24.

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 predetermined 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.

Environmental

Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878



L2300898-COFC

coc Number: 17 - WG-56484-260619

	www.alsglobal.com	-			'	<u>.</u>								<u>"!</u>										—
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Contact:	Airesse MacPhee		Quality Control ((QC) Rep	ort with R	eport 🔲 YES	□ NO		2	4 day	[P4-	20%]			၌ 1 E	lusines	s day	[E1 - 1	00%]					
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	SHIPMENT RELEASE (client use)			INITIAL S	HIPMEN	T RECEPTION (lab use or		· · · · · · · · · · · · · · · · · · ·						INAL SH			PTIO	N (lab	use onl				
Reteased by:	AAA a Date:	Time:	Received by:			Date:		T	Time		Reci	eived	by €			Date	: N	iN 2	8 20	110		Time:	26	10
~///M	Mu June 27/16	9 13:00	<u> </u>			ITS LABORATOR	il cobu	VELL		01.453								J17 L	0 4	112		<u>10.</u>		



GHD Field Sample Key (FSK)

Site Campbell River Landfill (056484-52)

Sample Reason Q3 2019 EMP

Sampler Name N. Turl & C. Thorne

Sampling Company GHD Ltd.

Laboratory(s) ALS Environmental

SSOW Reference Code :

Laboratory(s)	ALS	Environmental		_					Tempe	erature	рН	Eh /	ORP	Condu	uctivity	Turbi	idity	D	0	TE	os
Sample ID	Location	Sample Date (mm/dd/yyyy)	Sample Time (hh:mm)	Sample Type	Sample Matrix	Grab or Composite	Parent Sample ID for Field Dups	Footnote(s) Volume of Water Purged (L)	Sample Temperature	Temperature Units	Field pH (s.u.)	Eh / ORP	Eh / ORP Units	Conductivity	Conductivity Units	Turbidity	Turbidity Units	Dissolved Oxygen	Dissolved Oxygen Units	Total Dissolved Solids	Total Dissolved Solids Units
GROUNDWATER																					
WG-56484-220919-NT-01	MW01-16	9/22/2019	11:50	N	WG	Grab		100	6.47	C	6.88	392	mV	49	uS/cm	6.3	ntu	-	mg/L	0.032	g/L
WG-56484-220919-NT-02	EBA04-1	9/22/2019	12:20	N	WG	Grab		-	14.77	C	7.27	366	mV	60	uS/cm	26.1	ntu	-	mg/L	0.039	g/L
WG-56484-220919-NT-03	EBA11-3	9/22/2019	13:45	N	WG	Grab		42	9.77	С	7.10	389	mV	95	uS/cm	1.5	ntu	-	mg/L	0.062	g/L
WG-56484-220919-NT-04	EBA11-4	9/22/2019	14:20	N	WG	Grab		50	9.05	C	7.20	392	mV	78	uS/cm	58.2	ntu	-	mg/L	0.051	g/L
WG-56484-220919-NT-05	AG99-06	9/22/2019	13:30	N	WG	Grab		20	8.76	C	7.66	310	mV	233	uS/cm	>800	ntu	-	mg/L	0.151	g/L
WG-56484-220919-NT-06	EBA11-1	9/22/2019	15:20	N	WG	Grab		60	8.81	C	7.11	283	mV	263	uS/cm	76.4	ntu	-	mg/L	0.171	g/L
WG-56484-220919-NT-07	EBA11-1	9/22/2019	15:25	FD	WG	Grab	WG-56484-220919-NT-06	60	8.81	С	7.11	283	mV	263	uS/cm	76.4	ntu	-	mg/L	0.171	g/L
WG-56484-220919-NT-08	EBA04-6	9/22/2019	16:15	N	WG	Grab		116	9.80	С	7.26	293	mV	464	uS/cm	3.6	ntu	-	mg/L	0.301	g/L
WG-56484-220919-NT-09	EBA04-7	9/22/2019	16:25	N	WG	Grab		65	9.34	C	6.60	361	mV	522	uS/cm	1.0	ntu	-	mg/L	0.334	g/L
WG-56484-230919-NT-10	AG99-01	9/23/2019	9:45	N	WG	Grab		108	9.54	C	7.25	376	mV	160	uS/cm	15.1	ntu	-	mg/L	0.104	g/L
WG-56484-230919-NT-11	Field Blank	9/23/2019	9:15	FB	WG	Grab		-	-	С	-	-	mV	-	uS/cm	-	ntu	-	mg/L	-	g/L
WG-56484-230919-NT-12	AG99-05	9/23/2019	13:15	N	WG	Grab		180	10.15	С	8.20	318	mV	70	uS/cm	0.0	ntu	-	mg/L	0.045	g/L
WG-56484-230919-NT-13	MW03-18	9/23/2019	13:40	N	WG	Grab		60	10.48	С	8.28	296	mV	132	uS/cm	0.0	ntu	-	mg/L	0.085	g/L
WG-56484-230919-NT-14	EBA11-2	9/23/2019	14:20	N	WG	Grab		75	8.79	С	7.78	315	mV	184	uS/cm	161	ntu	-	mg/L	0.120	g/L
WG-56484-230919-NT-15	AG99-02	9/23/2019	16:00	N	WG	Grab		132	9.86	С	8.40	280	mV	123	uS/cm	0.0	ntu	-	mg/L	0.080	g/L
WG-56484-230919-NT-16	MW02-18	9/23/2019	16:40	N	WG	Grab		60	9.72	С	7.05	142	mV	486	uS/cm	0.0	ntu	-	mg/L	0.316	g/L
WG-56484-230919-NT-17	MW02-18	9/23/2019	16:45	FD	WG	Grab	WG-56484-230919-NT-16	60	9.72	С	7.05	142	mV	486	uS/cm	0.0	ntu	-	mg/L	0.316	g/L
WG-56484-230919-NT-18	AG99-04	9/23/2019	17:50	N	WG	Grab		126	9.09	С	8.32	260	mV	71	uS/cm	0.0	ntu	-	mg/L	0.046	g/L
WG-56484-230919-NT-19	HBT94-1	9/23/2019	18:20	N	WG	Grab		8	9.99	С	6.88	22	mV	431	uS/cm	115	ntu	-	mg/L	0.280	g/L
WG-56484-230919-NT-20	HBT94-2	9/23/2019	18:45	N	WG	Grab		135	10.32	С	7.65	-51	mV	395	uS/cm	7.1	ntu	-	mg/L	0.257	g/L
WG-56484-230919-NT-21	Trip Blank	9/23/2019	19:00	ТВ	WG	Grab		-	-	С	-	-	mV	-	uS/cm	-	ntu	-	mg/L	-	g/L
SURFACE WATER																					
WS-56484-230919-NT-01	SW-1	9/23/2019	12:20	N	WS	Grab		-	9.44	С	6.34	330	mV	60	uS/cm	0.0	ntu	12.86	mg/L	0.039	g/L
WS-56484-230919-NT-02	SW03-17	9/23/2019	12:30	N	WS	Grab		-	13.29	С	6.81	317	mV	22	uS/cm	0.6	ntu	6.69	mg/L	0.014	g/L





GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 24-SEP-19

Report Date: 10-OCT-19 16:59 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2352708Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River GW

Comments:

Selam Worku Account Manager

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

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700

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PAGE 2 of 28 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-1 WG-56484-220919-NT-01 Sampled By: N.Turl on 22-SEP-19 @ 11:50 Matrix: GW							
Physical Tests							
Conductivity	73.4		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	32.9		0.50	mg/L		25-SEP-19	
pH	7.78		0.10	pН		25-SEP-19	R4841433
Total Dissolved Solids	45		13	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	33.9		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	33.9		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	0.75		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.0838		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.0838		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	2.26		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (AI)-Dissolved	0.0023		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00152		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	10.5		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	1.62		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000111		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

PAGE 3 of 28 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-1 WG-56484-220919-NT-01 Sampled By: N.Turl on 22-SEP-19 @ 11:50 Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	0.142		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	0.000101		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	3.24		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	0.911		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.0147		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	0.74		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	0.00018		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00098		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	0.0016		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds				4	00.050.40	00 055 40	
Benzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromoform Carbon Tetrachloride	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chlorobenzene	<0.00050		0.00050	mg/L	28-SEP-19 28-SEP-19	28-SEP-19 28-SEP-19	R4846568 R4846568
Dibromochloromethane	<0.0010 <0.0010		0.0010 0.0010	mg/L mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichlorobenzene	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	04-OCT-19	R4851265
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-1 WG-56484-220919-NT-01 Sampled By: N.Turl on 22-SEP-19 @ 11:50 Matrix: GW							
Volatile Organic Compounds							
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Ethylbenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Styrene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	28-SEP-19	28-SEP-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Toluene	<0.00045		0.00045	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Vinyl Chloride	<0.00040		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Xylenes	<0.00075		0.00075	mg/L		29-SEP-19	101000
Surrogate: 4-Bromofluorobenzene (SS)	88.6		70-130	g, <u>_</u> %			R4846568
Surrogate: 1,4-Difluorobenzene (SS)	102.5		70-130	%		28-SEP-19	R4846568
Hydrocarbons	102.0		70 100	,,		20 02. 10	1101000
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	28-SEP-19	29-SEP-19	R4849255
VPH (C6-C10)	<0.10		0.10	mg/L		29-SEP-19	
Surrogate: 3,4-Dichlorotoluene (SS)	93.6		70-130	%		29-SEP-19	R4849255
L2352708-2 WG-56484-220919-NT-02 Sampled By: N.Turl on 22-SEP-19 @ 12:20 Matrix: GW							
Physical Tests							
Conductivity	90.7		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	40.7		0.50	mg/L		25-SEP-19	
рН	7.94		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	57		13	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	43.4		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	43.4		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	0.76		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.0619		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.0619		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	2.34		0.30	mg/L		24-SEP-19	R4839125

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

L2352708 CONTD.... PAGE 5 of 28

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-2 WG-56484-220919-NT-02 Sampled By: N.Turl on 22-SEP-19 @ 12:20 Matrix: GW							
Anions and Nutrients Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (AI)-Dissolved	0.0047		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00060		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	0.0000055		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	13.3		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00033		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00542		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	0.049		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	0.000323		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	1.79		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	0.00080		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000274		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	0.247		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	0.00019		0.00010	mg/L	24-SEP-19	25-SEP-19	R4842108
Silicon (Si)-Dissolved	4.24		0.10	mg/L	24-SEP-19	25-SEP-19	R4842108
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	1.03		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.0222		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	0.60		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000011		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00267		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-2 WG-56484-220919-NT-02							
Sampled By: N.Turl on 22-SEP-19 @ 12:20 Matrix: GW							
Dissolved Metals							
Zinc (Zn)-Dissolved	0.0149		0.0010	ma/l	24-SEP-19	25-SEP-19	D 40 40000
	0.0148		0.0010	mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-3EF-19	20-3EF-19	R4840889
L2352708-3 WG-56484-220919-NT-03 Sampled By: N.Turl on 22-SEP-19 @ 13:45 Matrix: GW							
Physical Tests							
Conductivity	148		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	65.7		0.50	mg/L		25-SEP-19	
pH	8.03		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	87		13	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	60.1		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	60.1		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	8.65		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.0662		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.0662		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	2.60		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (Al)-Dissolved	0.0030		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00066		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	21.0		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00052		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	3.23		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-3 WG-56484-220919-NT-03							
Sampled By: N.Turl on 22-SEP-19 @ 13:45 Matrix: GW							
Dissolved Metals							
Manganese (Mn)-Dissolved	0.00020		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000157		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	0.310		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	0.000144		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	4.44		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	1.68		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.0365		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	0.75		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000043		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00354		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	04-OCT-19	R4851265
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-3 WG-56484-220919-NT-03 Sampled By: N.Turl on 22-SEP-19 @ 13:45 Matrix: GW							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Ethylbenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Styrene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2,2-Tetrachloroethane	<0.0010		0.00020	mg/L	28-SEP-19	28-SEP-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Toluene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.00043	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Vinyl Chloride	<0.0040		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Xylenes	<0.00036		0.00036	mg/L	20 021 10	29-SEP-19	114040300
Surrogate: 4-Bromofluorobenzene (SS)	84.6		70-130	g/L %		28-SEP-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	101.9		70-130	%		28-SEP-19	R4846568
Hydrocarbons	101.9		70-130	70		20-021-13	114040300
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	28-SEP-19	29-SEP-19	R4849255
VPH (C6-C10)	<0.10		0.10	mg/L		29-SEP-19	
Surrogate: 3,4-Dichlorotoluene (SS)	88.2		70-130	%		29-SEP-19	R4849255
L2352708-4 WG-56484-220919-NT-04 Sampled By: N.Turl on 22-SEP-19 @ 14:20 Matrix: GW							
Physical Tests							
Conductivity	126		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	51.7		0.50	mg/L		02-OCT-19	
рН	8.00		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	73		13	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	53.6		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	53.6		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	5.28		0.50	mg/L		24-SEP-19	R4839125

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-4 WG-56484-220919-NT-04 Sampled By: N.Turl on 22-SEP-19 @ 14:20 Matrix: GW							
Anions and Nutrients							
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.182		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.182		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	1.79		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					02-OCT-19	R4853852
Aluminum (Al)-Dissolved	0.0034		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854348
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Arsenic (As)-Dissolved	0.00184		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Barium (Ba)-Dissolved	0.00123		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854348
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-OCT-19	02-OCT-19	R4854348
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	02-OCT-19	02-OCT-19	R4854348
Calcium (Ca)-Dissolved	16.3		0.050	mg/L	02-OCT-19	02-OCT-19	R4854348
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854348
Chromium (Cr)-Dissolved	0.00161		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854348
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-OCT-19	02-OCT-19	R4854348
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854348
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854348
Magnesium (Mg)-Dissolved	2.66		0.0050	mg/L	02-OCT-19	02-OCT-19	R4854348
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000105		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854348
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854348
Phosphorus (P)-Dissolved	0.060		0.050	mg/L	02-OCT-19	02-OCT-19	R4854348
Potassium (K)-Dissolved	0.772		0.050	mg/L	02-OCT-19	02-OCT-19	R4854348
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854348
Selenium (Se)-Dissolved	0.000220		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854348
Silicon (Si)-Dissolved	6.19		0.050	mg/L	02-OCT-19	02-OCT-19	R4854348
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854348
Sodium (Na)-Dissolved	2.54		0.050	mg/L	02-OCT-19	02-OCT-19	R4854348
Strontium (Sr)-Dissolved	0.0293		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854348
Sulfur (S)-Dissolved	0.72		0.50	mg/L	02-OCT-19	02-OCT-19	R4854348
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854348
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854348
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-4 WG-56484-220919-NT-04 Sampled By: N.Turl on 22-SEP-19 @ 14:20 Matrix: GW							
Dissolved Metals							
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	02-OCT-19	02-OCT-19	R4854348
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854348
Uranium (U)-Dissolved	0.000285		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854348
Vanadium (V)-Dissolved	0.0163		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854348
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854348
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854348
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Bromodichloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Bromoform	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Carbon Tetrachloride	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
Chlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Dibromochloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Chloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Chloroform	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Chloromethane	<0.0050		0.0050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,2-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Dichloromethane	<0.0050		0.0050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,2-Dichloropropane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Ethylbenzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Styrene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	01-OCT-19	04-OCT-19	R4821270
Tetrachloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Toluene	<0.00045		0.00045	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
Trichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Trichlorofluoromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-4 WG-56484-220919-NT-04 Sampled By: N.Turl on 22-SEP-19 @ 14:20 Matrix: GW							
Volatile Organic Compounds							
Vinyl Chloride	<0.00040		0.00040	mg/L	01-OCT-19	04-OCT-19	R4821270
ortho-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
meta- & para-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Xylenes	<0.00075		0.00075	mg/L		01-OCT-19	
Surrogate: 4-Bromofluorobenzene (SS)	103.0		70-130	%		01-OCT-19	R4821270
Surrogate: 1,4-Difluorobenzene (SS)	110.0		70-130	%		01-OCT-19	R4821270
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	01-OCT-19	01-OCT-19	R4824470
VPH (C6-C10)	<0.10		0.10	mg/L		01-OCT-19	
Surrogate: 3,4-Dichlorotoluene (SS)	100.5		70-130	%		01-OCT-19	R4824470
L2352708-5 WG-56484-220919-NT-05 Sampled By: N.Turl on 22-SEP-19 @ 13:30 Matrix: GW							
Physical Tests							
Conductivity	323		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	159		0.50	mg/L		25-SEP-19	
рН	8.29		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	190		20	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	175		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	8.09		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.267		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.267		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	2.92		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (Al)-Dissolved	0.0018		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00095		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	49.2		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-5 WG-56484-220919-NT-05 Sampled By: N.Turl on 22-SEP-19 @ 13:30 Matrix: GW							
Dissolved Metals							
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00099		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00505		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	0.000161		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	8.72		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	0.00016		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000102		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	0.440		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	0.00024		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	0.000174		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	4.95		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	4.06		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.129		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	0.68		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	0.00023		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000437		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00324		0.00050	mg/L	24-SEP-19		R4840889
Zinc (Zn)-Dissolved	0.0045		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds				,,	04 00T 40	04 OOT 40	
Benzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	
Bromodichloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	
Bromoform Carbon Tetrachloride	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	
	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	
Chlorobenzene Dibromochloromethane	<0.0010		0.0010	mg/L	01-OCT-19 01-OCT-19	04-OCT-19 04-OCT-19	
Chloroethane	<0.0010		0.0010	mg/L			
Chloroform	<0.0010		0.0010	mg/L	01-OCT-19 01-OCT-19	04-OCT-19	
Chloromethane	<0.0010 <0.0050		0.0010 0.0050	mg/L mg/L	01-OCT-19	04-OCT-19 04-OCT-19	
Onlordinguiane	<0.0000		0.0000	mg/L	01-001-19	04-001-19	114021270

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-5 WG-56484-220919-NT-05							
Sampled By: N.Turl on 22-SEP-19 @ 13:30 Matrix: GW							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,2-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Dichloromethane	<0.0050		0.0050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,2-Dichloropropane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Ethylbenzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Styrene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	01-OCT-19	04-OCT-19	R4821270
Tetrachloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Toluene	<0.00045		0.00045	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4821270
Trichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Trichlorofluoromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4821270
Vinyl Chloride	<0.00040		0.00040	mg/L	01-OCT-19	04-OCT-19	R4821270
ortho-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
meta- & para-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Xylenes	<0.00075		0.00075	mg/L		01-OCT-19	
Surrogate: 4-Bromofluorobenzene (SS)	110.1		70-130	%		01-OCT-19	
Surrogate: 1,4-Difluorobenzene (SS) Hydrocarbons	103.7		70-130	%		01-OCT-19	R4821270
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	01-OCT-19	01-OCT-19	R4824470
Volatile hydrocarbons (VHo-10) VPH (C6-C10)	<0.10		0.10	mg/L	01-001-19	01-OCT-19	114024470
Surrogate: 3,4-Dichlorotoluene (SS)	113.0		70-130	mg/L %			R4824470
L2352708-6 WG-56484-220919-NT-06 Sampled By: N.Turl on 22-SEP-19 @ 15:20 Matrix: GW	110.0		.0 100	70		3. 331 13	
Physical Tests							
Conductivity	409		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	200		0.50	mg/L		25-SEP-19	
pH	8.31		0.10	pH		25-SEP-19	R4841433
Total Dissolved Solids	249		20	mg/L		29-SEP-19	R4850467

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-6 WG-56484-220919-NT-06 Sampled By: N.Turl on 22-SEP-19 @ 15:20 Matrix: GW							
Physical Tests							
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	178		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	6.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	184		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	0.0225		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	12.2		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.969		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.969		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	25.7		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (AI)-Dissolved	0.0042		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00094		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00767		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	0.069		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	58.5		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00108		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	0.00039		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00029		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	0.097		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	13.1		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	0.242		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	0.0000060		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000204		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	0.870		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	7.54		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-6 WG-56484-220919-NT-06 Sampled By: N.Turl on 22-SEP-19 @ 15:20 Matrix: GW							
Dissolved Metals							
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	5.59		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.124		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	8.00		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000553		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00789		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,4-Dichlorobenzene 1,1-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19 28-SEP-19	28-SEP-19 28-SEP-19	R4846568
1,2-Dichloroethane	<0.0010 <0.0010		0.0010 0.0010	mg/L mg/L	28-SEP-19	28-SEP-19	R4846568 R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	04-OCT-19	R4851265
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Ethylbenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Styrene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-6 WG-56484-220919-NT-06 Sampled By: N.Turl on 22-SEP-19 @ 15:20 Matrix: GW							
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	28-SEP-19	28-SEP-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Toluene	<0.00045		0.00045	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Vinyl Chloride	<0.0040		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
ortho-Xylene	<0.00050		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Xylenes	<0.00030		0.00030	mg/L	20-321-19	29-SEP-19	114040300
Surrogate: 4-Bromofluorobenzene (SS)	89.1		70-130	// /// // // // // // // // // // // //		28-SEP-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	102.2		70-130	%		28-SEP-19	R4846568
Hydrocarbons	102.2		70-130	/0		20-3L1 -19	114040300
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	28-SEP-19	29-SEP-19	R4849255
VPH (C6-C10)	<0.10		0.10	mg/L		29-SEP-19	
Surrogate: 3,4-Dichlorotoluene (SS)	97.2		70-130	g/_ %		29-SEP-19	R4849255
L2352708-7 WG-56484-220919-NT-07 Sampled By: N.Turl on 22-SEP-19 @ 15:25 Matrix: GW							
Physical Tests							
Conductivity	412		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	198		0.50	mg/L		25-SEP-19	
pH	8.31		0.10	pН		25-SEP-19	R4841433
Total Dissolved Solids	270		20	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	178		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	5.4		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	183		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	0.0230		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	12.2		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	1.00		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	1.00		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	0.0019		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	25.8		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (AI)-Dissolved	0.0032		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-7 WG-56484-220919-NT-07							
Sampled By: N.Turl on 22-SEP-19 @ 15:25							
Matrix: GW							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00095		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00746		0.00010	mg/L	24-SEP-19		R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	0.070		0.010	mg/L	24-SEP-19		R4840889
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	58.8		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19		R4840889
Chromium (Cr)-Dissolved	0.00103		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	0.00036		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00022		0.00020	mg/L	24-SEP-19		R4840889
Iron (Fe)-Dissolved	0.095		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19		R4840889
Magnesium (Mg)-Dissolved	12.4		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	0.235		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-SEP-19		R4838811
Molybdenum (Mo)-Dissolved	0.000203		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19		R4840889
Potassium (K)-Dissolved	0.848		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	0.000053		0.000050	mg/L	24-SEP-19		R4840889
Silicon (Si)-Dissolved	7.52		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	5.68		0.050	mg/L	24-SEP-19		R4840889
Strontium (Sr)-Dissolved	0.122		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	8.03		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19		R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19		R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000548		0.000010	mg/L	24-SEP-19		R4840889
Vanadium (V)-Dissolved	0.00754		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds	-0.00050		0.00050	m c /l	20 CED 40	20 CED 40	D4040500
Benzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
* Refer to Referenced Information for Qualifiers (if any) and	l Mathadalan.				<u> </u>		

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-7 WG-56484-220919-NT-07							
Sampled By: N.Turl on 22-SEP-19 @ 15:25							
Matrix: GW							
Volatile Organic Compounds				_			
Bromodichloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	04-OCT-19	R4851265
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Ethylbenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Styrene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	28-SEP-19	28-SEP-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Toluene	<0.00045		0.00045	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Vinyl Chloride	<0.00040		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Xylenes	<0.00075		0.00075	mg/L		29-SEP-19	
Surrogate: 4-Bromofluorobenzene (SS)	86.4		70-130	%		28-SEP-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	103.7		70-130	%		28-SEP-19	R4846568
Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	28-SEP-19	29-SEP-19	R4849255
* Pafor to Paforanced Information for Qualifiers (if any) app							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-7 WG-56484-220919-NT-07 Sampled By: N.Turl on 22-SEP-19 @ 15:25 Matrix: GW							
Hydrocarbons							
VPH (C6-C10)	<0.10		0.10	mg/L		29-SEP-19	
Surrogate: 3,4-Dichlorotoluene (SS)	87.3		70-130	%		29-SEP-19	R4849255
L2352708-8 WG-56484-220919-NT-08 Sampled By: N.Turl on 22-SEP-19 @ 16:15 Matrix: GW							
Physical Tests							
Conductivity	639		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	344		0.50	mg/L		25-SEP-19	
рН	8.19		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	393		20	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	337		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	337		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	6.97		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	2.08		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	2.08		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	21.4		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (AI)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00886		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	0.097		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	0.0000149		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	104		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00067		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00067		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	20.3		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-8 WG-56484-220919-NT-08							
Sampled By: N.Turl on 22-SEP-19 @ 16:15 Matrix: GW							
Dissolved Metals							
Manganese (Mn)-Dissolved	0.00035		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	1.47		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	0.00055		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	12.0		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	7.23		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.221		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	6.96		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000346		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00159		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
L2352708-9 WG-56484-220919-NT-09 Sampled By: N.Turl on 22-SEP-19 @ 16:25 Matrix: GW							
Physical Tests							
Conductivity	818		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	399		0.50	mg/L		25-SEP-19	
рН	8.06		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	488		20	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	391		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L			R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L			R4841433
Alkalinity, Total (as CaCO3)	391		1.0	mg/L			R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L			R4842272
Chloride (CI)	40.3		2.5	mg/L			R4839125
Fluoride (F)	<0.10		0.10	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	1.31		0.025	mg/L		26-SEP-19	
Nitrate (as N)	1.31	B. E.	0.025	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		24-SEP-19	R4839125

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-9 WG-56484-220919-NT-09 Sampled By: N.Turl on 22-SEP-19 @ 16:25 Matrix: GW							
Anions and Nutrients							
Sulfate (SO4)	13.9		1.5	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (Al)-Dissolved	0.0011		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.0161		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	0.183		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	0.0000430		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	117		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	0.00033		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	0.00275		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	0.0011		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	25.7		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	0.128		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000106		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	0.00107		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	2.23		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	0.00109		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	12.7		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	26.7		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.309		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	4.91		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000724		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-9 WG-56484-220919-NT-09 Sampled By: N.Turl on 22-SEP-19 @ 16:25 Matrix: GW							
Dissolved Metals							
Vanadium (V)-Dissolved	0.00179		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1-Dichloroethylene 1,1-Dichloroethylene	<0.0010 <0.0010		0.0010 0.0010	mg/L mg/L	28-SEP-19 28-SEP-19	04-OCT-19 28-SEP-19	R4851265 R4846568
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Ethylbenzene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Styrene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	28-SEP-19	28-SEP-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Toluene	<0.00045		0.00045	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	28-SEP-19	28-SEP-19	R4846568
Vinyl Chloride	<0.00040		0.00040	mg/L	28-SEP-19	28-SEP-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	28-SEP-19	28-SEP-19	R4846568

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-9 WG-56484-220919-NT-09 Sampled By: N.Turl on 22-SEP-19 @ 16:25 Matrix: GW							
Volatile Organic Compounds							
Xylenes	<0.00075		0.00075	mg/L		29-SEP-19	
Surrogate: 4-Bromofluorobenzene (SS)	83.6		70-130	%		28-SEP-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	100.3		70-130	%		28-SEP-19	R4846568
Hydrocarbons	100.3		70-130	70		20-3L1 -13	114040300
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	28-SEP-19	29-SEP-19	R4849255
VPH (C6-C10)	<0.10		0.10	mg/L		29-SEP-19	
Surrogate: 3,4-Dichlorotoluene (SS)	78.8		70-130	%		29-SEP-19	R4849255
L2352708-10 WG-56484-230919-NT-10 Sampled By: N.Turl on 23-SEP-19 @ 09:45 Matrix: GW							
Physical Tests							
Conductivity	244		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	118		0.50	mg/L		25-SEP-19	
рН	8.28		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	148		20	mg/L		29-SEP-19	R4850467
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	125		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	125		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272
Chloride (CI)	3.50		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	0.248		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	0.248		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	3.22		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (Al)-Dissolved	0.0033		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	0.00069		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	0.00223		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	38.2		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	0.00049		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-10 WG-56484-230919-NT-10							
Sampled By: N.Turl on 23-SEP-19 @ 09:45							
Matrix: GW Dissolved Metals							
Copper (Cu)-Dissolved	0.00000		0.00000		24 CED 40	25 CED 40	D 40 40000
	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved Lead (Pb)-Dissolved	<0.010		0.010	mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889
	<0.000050		0.000050	mg/L			R4840889
Lithium (Li)-Dissolved Magnesium (Mg)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889
Manganese (Mn)-Dissolved	5.42 <0.00010		0.0050 0.00010	mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889 R4840889
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	0.000092		0.000050	mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.000		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved				_	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	
Rubidium (Rb)-Dissolved	0.827 <0.00020		0.050 0.00020	mg/L mg/L	24-SEP-19 24-SEP-19	25-SEP-19 25-SEP-19	R4840889 R4840889
Selenium (Se)-Dissolved	0.000169		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	6.26		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	2.24		0.000	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	0.0601		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	0.95		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	R4840889
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	0.000107		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	0.00532		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
L2352708-11 WG-56484-230919-NT-11 Sampled By: N.Turl on 23-SEP-19 @ 09:15 Matrix: GW				<u> </u>			
Physical Tests							
Conductivity	<2.0		2.0	uS/cm		25-SEP-19	R4841433
Hardness (as CaCO3)	<0.50		0.50	mg/L		25-SEP-19	
рН	5.54		0.10	рН		25-SEP-19	R4841433
Total Dissolved Solids	<10		10	mg/L		30-SEP-19	R4851640
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4841433
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4842272

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-11 WG-56484-230919-NT-11 Sampled By: N.Turl on 23-SEP-19 @ 09:15 Matrix: GW							
Anions and Nutrients							
Chloride (CI)	<0.50		0.50	mg/L		24-SEP-19	R4839125
Fluoride (F)	<0.020		0.020	mg/L		24-SEP-19	R4839125
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		26-SEP-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		24-SEP-19	R4839125
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839125
Sulfate (SO4)	<0.30		0.30	mg/L		24-SEP-19	R4839125
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-SEP-19	R4837609
Dissolved Metals Filtration Location	FIELD					24-SEP-19	R4837968
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-SEP-19	25-SEP-19	R4840889
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	R4840889
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L	24-SEP-19	25-SEP-19	R4840889
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-SEP-19	25-SEP-19	R4838811
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	R4840889
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Potassium (K)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	24-SEP-19	25-SEP-19	R4840889
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	24-SEP-19	25-SEP-19	R4840889
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352708-11 WG-56484-230919-NT-11							
Sampled By: N.Turl on 23-SEP-19 @ 09:15 Matrix: GW							
Dissolved Metals							
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	24-SEP-19	25-SEP-19	
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	24-SEP-19	25-SEP-19	R4840889
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	24-SEP-19	25-SEP-19	R4840889
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-SEP-19	25-SEP-19	
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-SEP-19	25-SEP-19	
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	24-SEP-19	25-SEP-19	R4840889
* Pafor to Paforanced Information for Qualifiars (if any) and						1	

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

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Reference Information

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Reference informati

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Chloromethane	LCS-ND	L2352708-4, -5
Laboratory Control Sample	Vinyl Chloride	LCS-ND	L2352708-4, -5
Laboratory Control Sample	trans-1,3-Dichloropropylene	LCS-ND	L2352708-1, -3, -6, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2352708-4
Matrix Spike	Boron (B)-Dissolved	MS-B	L2352708-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2352708-1, -10, -11, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2352708-4
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2352708-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2352708-1, -10, -11, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2352708-4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2352708-4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2352708-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2352708-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2352708-1, -10, -11, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2352708-4

Sample Parameter Qualifier key listed:

Water

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALK-TITR-VA

ALS Test Code	Matrix	Test Description	Method Reference**

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

APHA 2320 Alkalinity

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbon Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Alkalinity Species by Titration

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where the during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), presemed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

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Reference Information

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

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires and procedires and procedires and procedires and procedires and procedires and procedires and procedires and procedires are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

VH-HSFID-VA Water VH in Water by Headspace GCFID BC Env. Lab Manual (VH in Water)

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Compounds eluting between n-hexane and n-decane are measured and summed together using flame-ionization detection.

VH-SURR-FID-VA Water VH Surrogates for Waters BC Env. Lab Manual (VH in Solids)

VOC-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents GEMSated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace EPA 5021A/8260C

The water sample, with added reagents GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for EPA 5035A/5021A/8260C

Waters

VPH-CALC-VA Water VPH is VH minus select aromatics BC MOE VPH

VPHw measures Volatile Petroleum Hydrocarbons in water. Results are calculated by subtraction of specific Monocyclic Aromatic Hydrocarbons from

VH6-10, as per the BC Lab Manual VPH calculation procedure.

VPHw = VH6-10 minus Benzene, Toluene, Ethylbenzene, Xylenes, and Styrene

XYLENES-CALC-VA Water Sum of Xylene Isomer CALCULATION

Calculation of Total Xylenes Concentrations

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The

DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** 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

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2352708 Report Date: 10-OCT-19

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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA Batch R4841	Water							
WG3171564-4 DI Alkalinity, Total (as	JP	L2352708-1 33.9	34.4		mg/L	1.5	20	25-SEP-19
WG3171564-3 LC Alkalinity, Total (as	-		99.2		%		85-115	25-SEP-19
WG3171564-1 M Alkalinity, Total (as			<1.0		mg/L		1	25-SEP-19
CL-IC-N-VA	Water							
Batch R4839								
Chloride (CI)	JP	L2352487-1 9.26	9.25		mg/L	0.1	20	24-SEP-19
WG3171466-2 LC Chloride (CI)	CS		105.3		%		90-110	24-SEP-19
WG3171466-1 M Chloride (CI)	В		<0.50		mg/L		0.5	24-SEP-19
WG3171466-4 M S Chloride (CI)	S	L2352487-5	104.5		%		75-125	24-SEP-19
EC-PCT-VA	Water							
Batch R4841								
WG3171564-4 DI Conductivity	JP	L2352708-1 73.4	74.5		uS/cm	1.5	10	25-SEP-19
WG3171564-3 LC Conductivity	cs		102.0		%		90-110	25-SEP-19
WG3171564-1 M Conductivity	В		<2.0		uS/cm		2	25-SEP-19
F-IC-N-VA	Water							
Batch R4839	125							
WG3171466-3 DI Fluoride (F)	JP	L2352487-1 0.050	0.049		mg/L	1.6	20	24-SEP-19
WG3171466-2 LG Fluoride (F)	cs		99.9		%		90-110	24-SEP-19
WG3171466-1 M Fluoride (F)	В		<0.020		mg/L		0.02	24-SEP-19
WG3171466-4 M Fluoride (F)	S	L2352487-5	101.2		%		75-125	24-SEP-19
HG-D-CVAA-VA	Water							



Workorder: L2352708 Report Date: 10-OCT-19 Page 2 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4838708								
WG3171284-14 LCS Mercury (Hg)-Dissolved			98.7		%		90 420	0F 0FD 40
WG3171284-13 MB			30.1		/0		80-120	25-SEP-19
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	25-SEP-19
Batch R4838811								
WG3171284-15 DUP		L2352503-2						
Mercury (Hg)-Dissolved		<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	25-SEP-19
WG3171284-16 MS		L2352503-1	85.2		%		70.400	05 05D 40
Mercury (Hg)-Dissolved			00.2		70		70-130	25-SEP-19
MET-D-CCMS-VA	Water							
Batch R4840889 WG3171735-3 DUP		L2352708-1						
Aluminum (Al)-Dissolved		0.0023	0.0022		mg/L	3.1	20	25-SEP-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Barium (Ba)-Dissolved		0.00152	0.00153		mg/L	0.8	20	25-SEP-19
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-SEP-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-SEP-19
Cadmium (Cd)-Dissolved	I	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	25-SEP-19
Calcium (Ca)-Dissolved		10.5	10.6		mg/L	1.0	20	25-SEP-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-SEP-19
Chromium (Cr)-Dissolved	d	0.00014	0.00015		mg/L	3.2	20	25-SEP-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-SEP-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-SEP-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-SEP-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-SEP-19
Magnesium (Mg)-Dissolve	red	1.62	1.62		mg/L	0.1	20	25-SEP-19
Manganese (Mn)-Dissolve	red	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Molybdenum (Mo)-Dissolv	ved	0.000111	0.000105		mg/L	5.8	20	25-SEP-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-SEP-19
Phosphorus (P)-Dissolved	d	<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-SEP-19
Potassium (K)-Dissolved		0.142	0.139		mg/L	2.2	20	25-SEP-19
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4840889								
WG3171735-3 DUP	a	L2352708-1	0.000400		/I			
Selenium (Se)-Dissolved	a	0.000101	0.000103		mg/L	2.6	20	25-SEP-19
Silicon (Si)-Dissolved		3.24	3.30		mg/L	1.6	20	25-SEP-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-SEP-19
Sodium (Na)-Dissolved		0.911	0.902		mg/L	1.0	20	25-SEP-19
Strontium (Sr)-Dissolved	d	0.0147	0.0156		mg/L	6.0	20	25-SEP-19
Sulfur (S)-Dissolved		0.74	0.61		mg/L	19	20	25-SEP-19
Tellurium (Te)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-SEP-19
Thallium (TI)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-SEP-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Tin (Sn)-Dissolved		0.00018	0.00018		mg/L	2.5	20	25-SEP-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-SEP-19
Tungsten (W)-Dissolved	i	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-SEP-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-SEP-19
Vanadium (V)-Dissolved	i .	0.00098	0.00098		mg/L	0.1	20	25-SEP-19
Zinc (Zn)-Dissolved		0.0016	0.0015		mg/L	1.9	20	25-SEP-19
Zirconium (Zr)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-SEP-19
WG3171735-2 LCS Aluminum (Al)-Dissolved	d		101.7		%		80-120	25-SEP-19
Antimony (Sb)-Dissolved	d		95.6		%		80-120	25-SEP-19
Arsenic (As)-Dissolved			98.0		%		80-120	25-SEP-19
Barium (Ba)-Dissolved			97.6		%		80-120	25-SEP-19
Beryllium (Be)-Dissolved	d		94.9		%		80-120	25-SEP-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	25-SEP-19
Boron (B)-Dissolved			91.8		%		80-120	25-SEP-19
Cadmium (Cd)-Dissolve	ed		98.8		%		80-120	25-SEP-19
Calcium (Ca)-Dissolved			93.4		%		80-120	25-SEP-19
Cesium (Cs)-Dissolved			96.3		%		80-120	25-SEP-19
Chromium (Cr)-Dissolve	ed		101.5		%		80-120	25-SEP-19
Cobalt (Co)-Dissolved			95.5		%		80-120	25-SEP-19
Copper (Cu)-Dissolved			96.8		%		80-120	25-SEP-19
Iron (Fe)-Dissolved			96.9		%		80-120	25-SEP-19
Lead (Pb)-Dissolved			96.5		%		80-120	25-SEP-19
Lithium (Li)-Dissolved			95.2		%		80-120	25-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R484088	39							
WG3171735-2 LCS			07.0		0/		00.400	
Magnesium (Mg)-Diss			97.3 96.7		%		80-120	25-SEP-19
Manganese (Mn)-Diss							80-120	25-SEP-19
Molybdenum (Mo)-Dis	ssoiveu		100.4 96.3		%		80-120	25-SEP-19
Nickel (Ni)-Dissolved Phosphorus (P)-Disso	alvo d				%		80-120	25-SEP-19
Potassium (K)-Dissol			94.1 95.2		%		70-130	25-SEP-19
· ,					%		80-120	25-SEP-19
Rubidium (Rb)-Dissol			96.4 102.3				80-120	25-SEP-19
Selenium (Se)-Dissolved	veu		102.3		%		80-120	25-SEP-19
Silicon (Si)-Dissolved			96.6		%		60-140	25-SEP-19
Silver (Ag)-Dissolved Sodium (Na)-Dissolve	ad.				%		80-120	25-SEP-19
, ,			99.98		%		80-120	25-SEP-19
Strontium (Sr)-Dissolv Sulfur (S)-Dissolved	/eu		96.7 90.4		%		80-120	25-SEP-19
Tellurium (Te)-Dissolved	vod.		98.9		%		80-120	25-SEP-19
Thallium (TI)-Dissolve			98.9		%		80-120	25-SEP-19
Thorium (Th)-Dissolve			88.8		%		80-120 80-120	25-SEP-19
Tin (Sn)-Dissolved	z u		95.4		%		80-120	25-SEP-19
Titanium (Ti)-Dissolve	h.		93.4		%		80-120	25-SEP-19 25-SEP-19
Tungsten (W)-Dissolv			98.8		%		80-120	25-SEP-19 25-SEP-19
Uranium (U)-Dissolve			90.8		%		80-120	25-SEP-19
Vanadium (V)-Dissolv			100.5		%		80-120	25-SEP-19
Zinc (Zn)-Dissolved	ou		94.7		%		80-120	25-SEP-19
Zirconium (Zr)-Dissolv	ved.		93.3		%		80-120	25-SEP-19
WG3171735-1 MB			00.0		,-		00-120	25 021 -15
Aluminum (Al)-Dissolv	/ed		<0.0010		mg/L		0.001	25-SEP-19
Antimony (Sb)-Dissolv	ved		<0.00010)	mg/L		0.0001	25-SEP-19
Arsenic (As)-Dissolve	d		<0.00010)	mg/L		0.0001	25-SEP-19
Barium (Ba)-Dissolve	d		<0.00010)	mg/L		0.0001	25-SEP-19
Beryllium (Be)-Dissolv	/ed		<0.00010)	mg/L		0.0001	25-SEP-19
Bismuth (Bi)-Dissolve	d		<0.00005	60	mg/L		0.00005	25-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-SEP-19
Cadmium (Cd)-Dissol	ved		<0.00000)5C	mg/L		0.000005	25-SEP-19
Calcium (Ca)-Dissolve	ed		<0.050		mg/L		0.05	25-SEP-19
Cesium (Cs)-Dissolve	ed		<0.00001	0	mg/L		0.00001	25-SEP-19



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Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4840889							
WG3171735-1 MB		0.00040		/I		0.0004	
Chromium (Cr)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Cobalt (Co)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Copper (Cu)-Dissolved		<0.00020		mg/L		0.0002	25-SEP-19
Iron (Fe)-Dissolved		<0.010	_	mg/L		0.01	25-SEP-19
Lead (Pb)-Dissolved		<0.000050)	mg/L		0.00005	25-SEP-19
Lithium (Li)-Dissolved		<0.0010		mg/L		0.001	25-SEP-19
Magnesium (Mg)-Dissolved		<0.0050		mg/L		0.005	25-SEP-19
Manganese (Mn)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Molybdenum (Mo)-Dissolved		<0.00005)	mg/L		0.00005	25-SEP-19
Nickel (Ni)-Dissolved		<0.00050		mg/L		0.0005	25-SEP-19
Phosphorus (P)-Dissolved		<0.050		mg/L		0.05	25-SEP-19
Potassium (K)-Dissolved		<0.050		mg/L		0.05	25-SEP-19
Rubidium (Rb)-Dissolved		<0.00020		mg/L		0.0002	25-SEP-19
Selenium (Se)-Dissolved		<0.000050)	mg/L		0.00005	25-SEP-19
Silicon (Si)-Dissolved		<0.050		mg/L		0.05	25-SEP-19
Silver (Ag)-Dissolved		<0.00001)	mg/L		0.00001	25-SEP-19
Sodium (Na)-Dissolved		<0.050		mg/L		0.05	25-SEP-19
Strontium (Sr)-Dissolved		<0.00020		mg/L		0.0002	25-SEP-19
Sulfur (S)-Dissolved		<0.50		mg/L		0.5	25-SEP-19
Tellurium (Te)-Dissolved		<0.00020		mg/L		0.0002	25-SEP-19
Thallium (TI)-Dissolved		<0.000010)	mg/L		0.00001	25-SEP-19
Thorium (Th)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	25-SEP-19
Tungsten (W)-Dissolved		<0.00010		mg/L		0.0001	25-SEP-19
Uranium (U)-Dissolved		<0.00001)	mg/L		0.00001	25-SEP-19
Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	25-SEP-19
Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	25-SEP-19
Zirconium (Zr)-Dissolved		<0.00020		mg/L		0.0002	25-SEP-19
WG3171735-4 MS Aluminum (Al)-Dissolved	L2352708-2	97.5		%		70-130	25-SEP-19
Antimony (Sb)-Dissolved		101.6		%		70-130	25-SEP-19
Arsenic (As)-Dissolved		99.5		%		70-130	25-SEP-19
Barium (Ba)-Dissolved		97.0		%		70-130	25-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4840889								
WG3171735-4 MS		L2352708-2						
Beryllium (Be)-Dissolve	d		96.3		%		70-130	25-SEP-19
Bismuth (Bi)-Dissolved			89.4		%		70-130	25-SEP-19
Boron (B)-Dissolved			93.4		%		70-130	25-SEP-19
Cadmium (Cd)-Dissolve			100.3		%		70-130	25-SEP-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	25-SEP-19
Cesium (Cs)-Dissolved			97.0		%		70-130	25-SEP-19
Chromium (Cr)-Dissolve	ed		97.6		%		70-130	25-SEP-19
Cobalt (Co)-Dissolved			97.5		%		70-130	25-SEP-19
Copper (Cu)-Dissolved			99.1		%		70-130	25-SEP-19
Iron (Fe)-Dissolved			100.8		%		70-130	25-SEP-19
Lead (Pb)-Dissolved			96.5		%		70-130	25-SEP-19
Lithium (Li)-Dissolved			97.3		%		70-130	25-SEP-19
Magnesium (Mg)-Disso	lved		N/A	MS-B	%		-	25-SEP-19
Manganese (Mn)-Disso			98.9		%		70-130	25-SEP-19
Molybdenum (Mo)-Diss	olved		96.0		%		70-130	25-SEP-19
Nickel (Ni)-Dissolved			98.0		%		70-130	25-SEP-19
Phosphorus (P)-Dissolv	red		100.8		%		70-130	25-SEP-19
Potassium (K)-Dissolve	d		94.8		%		70-130	25-SEP-19
Rubidium (Rb)-Dissolve	ed		99.7		%		70-130	25-SEP-19
Silver (Ag)-Dissolved			99.5		%		70-130	25-SEP-19
Sodium (Na)-Dissolved			103.2		%		70-130	25-SEP-19
Strontium (Sr)-Dissolve	d		N/A	MS-B	%		-	25-SEP-19
Sulfur (S)-Dissolved			126.0		%		70-130	25-SEP-19
Tellurium (Te)-Dissolve	d		94.1		%		70-130	25-SEP-19
Thallium (TI)-Dissolved			91.4		%		70-130	25-SEP-19
Thorium (Th)-Dissolved	l		99.5		%		70-130	25-SEP-19
Tin (Sn)-Dissolved			96.4		%		70-130	25-SEP-19
Titanium (Ti)-Dissolved			92.9		%		70-130	25-SEP-19
Tungsten (W)-Dissolved	d		98.8		%		70-130	25-SEP-19
Uranium (U)-Dissolved			92.5		%		70-130	25-SEP-19
Vanadium (V)-Dissolved	d		102.5		%		70-130	25-SEP-19
Zinc (Zn)-Dissolved			96.4		%		70-130	25-SEP-19
Zirconium (Zr)-Dissolve	d		99.4		%		70-130	25-SEP-19



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Batch R4854348 W3317905-53 DUP L2355893-1 Aluminum (Al)-Dissolved 0.0020 0.0211 mg/L 2.6 20 02-OCT-19 Aluminum (Al)-Dissolved 0.00023 0.00018 mg/L 2.6 20 02-OCT-19 Aluminum (Al)-Dissolved 0.00415 0.00405 mg/L 2.4 20 02-OCT-19 Barlum (Ba)-Dissolved 0.00415 0.00405 mg/L 0.9 20 02-OCT-19 Barlum (Ba)-Dissolved 0.00941 0.00933 mg/L 0.9 20 02-OCT-19 Berylium (Ba)-Dissolved 0.00010 0.00010 RPD-NA mg/L N/A 20 02-OCT-19 Berylium (Ba)-Dissolved 0.000050 0.000050 RPD-NA mg/L 0.9 20 02-OCT-19 0.000050 0.000050 RPD-NA mg/L 0.9 20 02-OCT-19 0.000050 0.000050 RPD-NA mg/L 0.9 20 02-OCT-19 0.000050 0.000050 0.000050 RPD-NA mg/L 0.9 20 02-OCT-19 0.000050	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG179005-3 DUP L3255893-1 O.0200 O.0211 mg/L 4.3 20 02-OCT-19 Aluminum (Al)-Dissolved O.00023 O.00018 mg/L 2.6 20 02-OCT-19 Arsenic (As)-Dissolved O.00415 O.00405 mg/L 2.4 20 02-OCT-19 Barlum (Ba)-Dissolved O.00941 O.00933 mg/L O.9 20 02-OCT-19 Beryllium (Be)-Dissolved O.00941 O.00933 mg/L O.9 20 02-OCT-19 Beryllium (Be)-Dissolved O.000050 O.000050 RPD-NA mg/L N/A 20 02-OCT-19 Boron (B)-Dissolved O.000050 O.000050 RPD-NA mg/L N/A 20 02-OCT-19 Boron (B)-Dissolved O.000722 O.000726 mg/L O.9 20 O2-OCT-19 Cadmium (Ca)-Dissolved O.000072 O.0000726 mg/L O.9 20 O2-OCT-19 Calcium (Ca)-Dissolved O.000072 O.0000728 mg/L O.9 20 O2-OCT-19 Calcium (Ca)-Dissolved O.000021 O.000023 mg/L O.4 20 O2-OCT-19 Chromium (Cr)-Dissolved O.000026 O.00027 mg/L O.6 O.000072 Copper (Cu)-Dissolved O.000026 O.00027 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.000072 O.000072 mg/L O.6 O.0000072 O.0000072 mg/L O.6 O.0000072 O.0000072 mg/L O.6 O.00000072 O.0000000 O.0000000 O.00000000 O.0000000000	MET-D-CCMS-VA	Water							
Aluminum (Al)-Dissolved	Batch R48543	348							
Arsenic (As)-Dissolved				0.0211		mg/L	4.3	20	02-OCT-19
Barium (Ba)-Dissolved	Antimony (Sb)-Disso	olved	0.00023	0.00018		mg/L	2.6	20	02-OCT-19
Beryllium (Be)-Dissolved	Arsenic (As)-Dissolv	red	0.00415	0.00405		mg/L	2.4	20	02-OCT-19
Bismuth (Bi)-Dissolved	Barium (Ba)-Dissolv	ed	0.00941	0.00933		mg/L	0.9	20	02-OCT-19
Boron (B)-Dissolved 0.905 0.928 mg/L 2.0 20 02-OCT-19 Cadmium (Cd)-Dissolved 0.0000732 0.0000726 mg/L 0.9 20 02-OCT-19 Calcium (Ca)-Dissolved 2.65 2.86 mg/L 0.4 20 02-OCT-19 Cesium (Cs)-Dissolved 0.00021 0.000023 mg/L 5.8 20 02-OCT-19 Chromium (Cr)-Dissolved 0.00026 0.00027 mg/L 2.6 20 02-OCT-19 Cobalt (Co)-Dissolved 0.00016 0.00010 RPD-NA mg/L N/A 20 02-OCT-19 Copper (Cu)-Dissolved 0.00010 0.00010 RPD-NA mg/L 1.9 20 02-OCT-19 Iron (Fe)-Dissolved 0.0020 0.0022 mg/L 1.9 20 02-OCT-19 Iron (Fe)-Dissolved 0.020 0.022 mg/L 1.9 20 02-OCT-19 Iron (Fe)-Dissolved 0.000050 0.000050 RPD-NA mg/L N/A 20 02-OCT-19 Iron (Fe)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Iron (Mg)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Iron (Mg)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Iron (Mg)-Dissolved 0.00185 0.00077 mg/L 0.6 20 02-OCT-19 Iron (Mg)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Iron (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Iron (Mg)-Dissolved 0.00185 0.00184 mg/L 0.6 20 02-OCT-19 Iron (Mg)-Dissolved 0.0050 0.0050 RPD-NA mg/L N/A 20 02-OCT-19 Iron (Mg)-Dissolved 0.0050 0.0050 RPD-NA mg/L N/A 20 02-OCT-19 Iron (Mg)-Dissolved 0.00070 0.00075 mg/L 1.8 20 02-OCT-19 Iron (Mg)-Dissolved 0.000163 mg/L 2.4 20 02-OCT-19 Iron (Mg)-Dissolved 0.000163 mg/L 0.3 20 02-OCT-19 Iron (Mg)-Dissolved 0.000163 mg/L 0.3 20 02-OCT-19 Iron (Mg)-Dissolved 0.00016 0.00010 RPD-NA mg/L 0.3 20 02-OCT-19 Iron (Mg)-Dissolved 0.00010 0.00010 RPD-NA mg/L 0.3 20 02-OCT-19 Iron (Mg)-Dissolved 0.00010 0.000010 RPD-NA mg/L 0.3 20 02-OCT-19 Iron (Mg)-Dissolved 0.00010 0.000010 RPD-NA mg/L 0.00000-DC-OCT-19 Iron (Mg)-Dissolved 0.00010 0.000010 RPD-NA	Beryllium (Be)-Disso	olved	< 0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Cadmium (Cd)-Dissolved 0.0000732 0.0000735 mg/L 0.9 20 02-OCT-19 Calcium (Ca)-Dissolved 2.65 2.86 mg/L 0.4 20 02-OCT-19 Cesium (Cs)-Dissolved 0.000021 0.000023 mg/L 5.8 20 02-OCT-19 Chromium (Cr)-Dissolved 0.00026 0.00027 mg/L 2.6 20 02-OCT-19 Cobalt (Co)-Dissolved 0.00020 0.00023 mg/L N/A 20 02-OCT-19 Copper (Cu)-Dissolved 0.00020 0.00023 mg/L 4.6 20 02-OCT-19 Iron (Fe)-Dissolved 0.00020 0.0022 mg/L 1.9 20 02-OCT-19 Lead (Pb)-Dissolved 0.00050 <0.00050 RPD-NA mg/L N/A 20 02-OCT-19 Lithium (Li)-Dissolved 0.0146 0.0149 mg/L 0.4 20 02-OCT-19 Manganese (Mn)-Dissolved 0.0594 0.657 mg/L 0.6 20 02-OCT-19 Molybdenum (Mo)-Diss	Bismuth (Bi)-Dissolv	red	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Calcium (Ca)-Dissolved 2.65 2.86 mg/L 0.4 20 02-OCT-19 Cesium (Cs)-Dissolved 0.000021 0.000023 mg/L 5.8 20 02-OCT-19 Chromium (Cr)-Dissolved 0.00026 0.00027 mg/L 2.6 20 02-OCT-19 Cobalt (Co)-Dissolved 0.00010 <0.00010 RPD-NA mg/L N/A 20 02-OCT-19 Copper (Cu)-Dissolved 0.00020 0.00023 mg/L 4.6 20 02-OCT-19 Iron (Fe)-Dissolved 0.00020 0.00023 mg/L 4.6 20 02-OCT-19 Lead (Pb)-Dissolved 0.00050 <0.00050 RPD-NA mg/L N/A 20 02-OCT-19 Lithium (Li)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Magnesium (Mg)-Dissolved 0.594 0.657 mg/L 0.4 20 02-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L N/A 20 02-OCT-19	Boron (B)-Dissolved		0.905	0.928		mg/L	2.0	20	02-OCT-19
Cesium (Cs)-Dissolved 0.000021 0.000023 mg/L 5.8 20 02-OCT-19 Chromium (Cr)-Dissolved 0.00026 0.00027 mg/L 2.6 20 02-OCT-19 Cobalt (Co)-Dissolved <0.00010	Cadmium (Cd)-Disse	olved	0.0000732	0.0000726		mg/L	0.9	20	02-OCT-19
Chromium (Cr)-Dissolved 0.00026 0.00027 mg/L 2.6 20 02-OCT-19 Cobalt (Co)-Dissolved <0.00010	Calcium (Ca)-Dissol	ved	2.65	2.86		mg/L	0.4	20	02-OCT-19
Cobalt (Co)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 02-0CT-19 Copper (Cu)-Dissolved 0.00020 0.00023 mg/L 4.6 20 02-0CT-19 Iron (Fe)-Dissolved 0.020 0.022 mg/L 1.9 20 02-0CT-19 Lead (Pb)-Dissolved <0.000050	Cesium (Cs)-Dissolv	/ed	0.000021	0.000023		mg/L	5.8	20	02-OCT-19
Copper (Cu)-Dissolved 0.00020 0.00023 mg/L 4.6 20 02-OCT-19 Iron (Fe)-Dissolved 0.020 0.022 mg/L 1.9 20 02-OCT-19 Lead (Pb)-Dissolved <0.000050	Chromium (Cr)-Diss	olved	0.00026	0.00027		mg/L	2.6	20	02-OCT-19
Iron (Fe)-Dissolved 0.020 0.022 mg/L 1.9 20 02-OCT-19 Lead (Pb)-Dissolved <0.000050	Cobalt (Co)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Lead (Pb)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 02-OCT-19 Lithium (Li)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Magnesium (Mg)-Dissolved 0.594 0.657 mg/L 0.4 20 02-OCT-19 Manganese (Mn)-Dissolved 0.00196 0.00207 mg/L 0.6 20 02-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Nickel (Ni)-Dissolved 0.00050 <0.00050	Copper (Cu)-Dissolv	ved .	0.00020	0.00023		mg/L	4.6	20	02-OCT-19
Lithium (Li)-Dissolved 0.0146 0.0149 mg/L 1.4 20 02-OCT-19 Magnesium (Mg)-Dissolved 0.594 0.657 mg/L 0.4 20 02-OCT-19 Manganese (Mn)-Dissolved 0.00186 0.00207 mg/L 0.6 20 02-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Nickel (Ni)-Dissolved <0.00050	Iron (Fe)-Dissolved		0.020	0.022		mg/L	1.9	20	02-OCT-19
Magnesium (Mg)-Dissolved 0.594 0.657 mg/L 0.4 20 02-OCT-19 Manganese (Mn)-Dissolved 0.00196 0.00207 mg/L 0.6 20 02-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Nickel (Ni)-Dissolved <0.00050	Lead (Pb)-Dissolved	I	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Manganese (Mn)-Dissolved 0.00196 0.00207 mg/L 0.6 20 02-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Nickel (Ni)-Dissolved <0.00050	Lithium (Li)-Dissolve	ed	0.0146	0.0149		mg/L	1.4	20	02-OCT-19
Molybdenum (Mo)-Dissolved 0.00185 0.00184 mg/L 2.2 20 02-OCT-19 Nickel (Ni)-Dissolved <0.00050	Magnesium (Mg)-Dis	ssolved	0.594	0.657		mg/L	0.4	20	02-OCT-19
Nickel (Ni)-Dissolved <0.00050 <0.00050 RPD-NA mg/L N/A 20 02-OCT-19 Phosphorus (P)-Dissolved <0.050	Manganese (Mn)-Dis	ssolved	0.00196	0.00207		mg/L	0.6	20	02-OCT-19
Phosphorus (P)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 02-OCT-19 Potassium (K)-Dissolved 0.744 0.804 mg/L 2.2 20 02-OCT-19 Rubidium (Rb)-Dissolved 0.00070 0.00075 mg/L 18 20 02-OCT-19 Selenium (Se)-Dissolved 0.000159 0.000163 mg/L 2.4 20 02-OCT-19 Silicon (Si)-Dissolved 5.24 5.84 mg/L 0.8 20 02-OCT-19 Silver (Ag)-Dissolved <0.000010	Molybdenum (Mo)-D	oissolved	0.00185	0.00184		mg/L	2.2	20	02-OCT-19
Potassium (K)-Dissolved 0.744 0.804 mg/L 2.2 20 02-OCT-19 Rubidium (Rb)-Dissolved 0.00070 0.00075 mg/L 18 20 02-OCT-19 Selenium (Se)-Dissolved 0.000159 0.000163 mg/L 2.4 20 02-OCT-19 Silicon (Si)-Dissolved 5.24 5.84 mg/L 0.8 20 02-OCT-19 Silver (Ag)-Dissolved <0.000010	Nickel (Ni)-Dissolved	d	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Rubidium (Rb)-Dissolved 0.00070 0.00075 mg/L 18 20 02-OCT-19 Selenium (Se)-Dissolved 0.000159 0.000163 mg/L 2.4 20 02-OCT-19 Silicon (Si)-Dissolved 5.24 5.84 mg/L 0.8 20 02-OCT-19 Silver (Ag)-Dissolved <0.000010	Phosphorus (P)-Diss	solved	< 0.050	< 0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Selenium (Se)-Dissolved 0.000159 0.000163 mg/L 2.4 20 02-OCT-19 Silicon (Si)-Dissolved 5.24 5.84 mg/L 0.8 20 02-OCT-19 Silver (Ag)-Dissolved <0.000010	Potassium (K)-Disso	olved	0.744	0.804		mg/L	2.2	20	02-OCT-19
Silicon (Si)-Dissolved 5.24 5.84 mg/L 0.8 20 02-OCT-19 Silver (Ag)-Dissolved <0.000010	Rubidium (Rb)-Disso	olved	0.00070	0.00075		mg/L	18	20	02-OCT-19
Silver (Ag)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 02-OCT-19 Sodium (Na)-Dissolved 117 124 mg/L 0.3 20 02-OCT-19 Strontium (Sr)-Dissolved 0.324 0.303 mg/L 1.3 20 02-OCT-19 Sulfur (S)-Dissolved 18.5 22.8 mg/L 1.2 20 02-OCT-19 Tellurium (Te)-Dissolved <0.00020	Selenium (Se)-Disso	olved	0.000159	0.000163		mg/L	2.4	20	02-OCT-19
Sodium (Na)-Dissolved 117 124 mg/L 0.3 20 02-OCT-19 Strontium (Sr)-Dissolved 0.324 0.303 mg/L 1.3 20 02-OCT-19 Sulfur (S)-Dissolved 18.5 22.8 mg/L 1.2 20 02-OCT-19 Tellurium (Te)-Dissolved <0.00020	Silicon (Si)-Dissolve	d	5.24	5.84		mg/L	0.8	20	02-OCT-19
Strontium (Sr)-Dissolved 0.324 0.303 mg/L 1.3 20 02-OCT-19 Sulfur (S)-Dissolved 18.5 22.8 mg/L 1.2 20 02-OCT-19 Tellurium (Te)-Dissolved <0.00020	Silver (Ag)-Dissolved	d	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Sulfur (S)-Dissolved 18.5 22.8 mg/L 1.2 20 02-OCT-19 Tellurium (Te)-Dissolved <0.00020	Sodium (Na)-Dissolv	/ed	117	124		mg/L	0.3	20	02-OCT-19
Tellurium (Te)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 02-OCT-19 Thallium (TI)-Dissolved <0.000010	Strontium (Sr)-Disso	olved	0.324	0.303		mg/L	1.3	20	02-OCT-19
Thallium (TI)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 02-OCT-19 Thorium (Th)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 02-OCT-19	Sulfur (S)-Dissolved		18.5	22.8		mg/L	1.2	20	02-OCT-19
Thorium (Th)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 02-OCT-19	Tellurium (Te)-Disso	olved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
	Thallium (TI)-Dissolv	/ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Tin (Sn)-Dissolved 0.00016 0.00019 mg/L 02-OCT-19	Thorium (Th)-Dissol	ved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
	Tin (Sn)-Dissolved		0.00016	0.00019		mg/L			02-OCT-19



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Test Matr	rix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Wat	ter						
Batch R4854348							
WG3179005-3 DUP Tin (Sn)-Dissolved	L2355893-1 0.00016	0.00019		mg/L	3.3	20	02-OCT-19
Titanium (Ti)-Dissolved	0.00054	0.00059		mg/L	9.5	20	02-OCT-19
Tungsten (W)-Dissolved	0.00140	0.00147		mg/L	0.4	20	02-OCT-19
Uranium (U)-Dissolved	0.000233	0.000255		mg/L	1.8	20	02-OCT-19
Vanadium (V)-Dissolved	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Zinc (Zn)-Dissolved	0.0071	0.0071		mg/L	1.1	20	02-OCT-19
Zirconium (Zr)-Dissolved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179005-2 LCS Aluminum (Al)-Dissolved		103.3		%		80-120	02-OCT-19
Antimony (Sb)-Dissolved		97.7		%		80-120	02-OCT-19
Arsenic (As)-Dissolved		98.2		%		80-120	02-OCT-19
Barium (Ba)-Dissolved		98.4		%		80-120	02-OCT-19
Beryllium (Be)-Dissolved		102.6		%		80-120	02-OCT-19
Bismuth (Bi)-Dissolved		102.5		%		80-120	02-OCT-19
Boron (B)-Dissolved		100.8		%		80-120	02-OCT-19
Cadmium (Cd)-Dissolved		98.8		%		80-120	02-OCT-19
Calcium (Ca)-Dissolved		101.8		%		80-120	02-OCT-19
Cesium (Cs)-Dissolved		98.3		%		80-120	02-OCT-19
Chromium (Cr)-Dissolved		100.4		%		80-120	02-OCT-19
Cobalt (Co)-Dissolved		100.2		%		80-120	02-OCT-19
Copper (Cu)-Dissolved		98.6		%		80-120	02-OCT-19
Iron (Fe)-Dissolved		99.99		%		80-120	02-OCT-19
Lead (Pb)-Dissolved		102.0		%		80-120	02-OCT-19
Lithium (Li)-Dissolved		100.2		%		80-120	02-OCT-19
Magnesium (Mg)-Dissolved		101.0		%		80-120	02-OCT-19
Manganese (Mn)-Dissolved		99.7		%		80-120	02-OCT-19
Molybdenum (Mo)-Dissolved		101.6		%		80-120	02-OCT-19
Nickel (Ni)-Dissolved		99.8		%		80-120	02-OCT-19
Phosphorus (P)-Dissolved		92.6		%		70-130	02-OCT-19
Potassium (K)-Dissolved		102.2		%		80-120	02-OCT-19
Rubidium (Rb)-Dissolved		102.3		%		80-120	02-OCT-19
Selenium (Se)-Dissolved		96.3		%		80-120	02-OCT-19
Silicon (Si)-Dissolved		106.5		%		60-140	02-OCT-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4854348								
WG3179005-2 LCS Silver (Ag)-Dissolved			94.5		%		80-120	02-OCT-19
Sodium (Na)-Dissolved			101.5		%		80-120	02-OCT-19
Strontium (Sr)-Dissolve	d		104.1		%		80-120	02-OCT-19
Sulfur (S)-Dissolved			109.1		%		80-120	02-OCT-19
Tellurium (Te)-Dissolve	d		95.7		%		80-120	02-OCT-19
Thallium (TI)-Dissolved			100.6		%		80-120	02-OCT-19
Thorium (Th)-Dissolved			100.2		%		80-120	02-OCT-19
Tin (Sn)-Dissolved			97.6		%		80-120	02-OCT-19
Titanium (Ti)-Dissolved			94.9		%		80-120	02-OCT-19
Tungsten (W)-Dissolved	t		103.5		%		80-120	02-OCT-19
Uranium (U)-Dissolved			104.2		%		80-120	02-OCT-19
Vanadium (V)-Dissolved	t		101.3		%		80-120	02-OCT-19
Zinc (Zn)-Dissolved			99.4		%		80-120	02-OCT-19
Zirconium (Zr)-Dissolve	d		98.5		%		80-120	02-OCT-19
WG3179005-1 MB								
Aluminum (Al)-Dissolve	d		<0.0010		mg/L		0.001	02-OCT-19
Antimony (Sb)-Dissolve	d		<0.00010		mg/L		0.0001	02-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Beryllium (Be)-Dissolve	d		<0.00010		mg/L		0.0001	02-OCT-19
Bismuth (Bi)-Dissolved			<0.00005	0	mg/L		0.00005	02-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-OCT-19
Cadmium (Cd)-Dissolve	ed		<0.00000	50	mg/L		0.000005	02-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-OCT-19
Cesium (Cs)-Dissolved			<0.00001	0	mg/L		0.00001	02-OCT-19
Chromium (Cr)-Dissolve	ed		<0.00010		mg/L		0.0001	02-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-OCT-19
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	02-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-OCT-19
Magnesium (Mg)-Disso	ved		<0.0050		mg/L		0.005	02-OCT-19
Manganese (Mn)-Disso	ved		<0.00010		mg/L		0.0001	02-OCT-19
Molybdenum (Mo)-Disse	olved		<0.00005	0	mg/L		0.00005	02-OCT-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4854348								
WG3179005-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-OCT-19
Phosphorus (P)-Dissolv			<0.050		mg/L		0.05	02-OCT-19
Potassium (K)-Dissolve			<0.050		mg/L		0.05	02-OCT-19
Rubidium (Rb)-Dissolve			<0.00020	_	mg/L		0.0002	02-OCT-19
Selenium (Se)-Dissolve	d		<0.000050	0	mg/L		0.00005	02-OCT-19
Silicon (Si)-Dissolved			<0.050	_	mg/L		0.05	02-OCT-19
Silver (Ag)-Dissolved			<0.000010	0	mg/L		0.00001	02-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-OCT-19
Strontium (Sr)-Dissolve	d		<0.00020		mg/L		0.0002	02-OCT-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	02-OCT-19
Tellurium (Te)-Dissolve	d		<0.00020		mg/L		0.0002	02-OCT-19
Thallium (TI)-Dissolved			<0.000010	0	mg/L		0.00001	02-OCT-19
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-OCT-19
Tungsten (W)-Dissolve	d		<0.00010		mg/L		0.0001	02-OCT-19
Uranium (U)-Dissolved			<0.000010	0	mg/L		0.00001	02-OCT-19
Vanadium (V)-Dissolve	d		<0.00050		mg/L		0.0005	02-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-OCT-19
Zirconium (Zr)-Dissolve	d		<0.00020		mg/L		0.0002	02-OCT-19
WG3179005-4 MS Aluminum (Al)-Dissolve	d	L2357669-1	101.2		%		70-130	02-OCT-19
Antimony (Sb)-Dissolve			99.6		%		70-130	02-OCT-19
Arsenic (As)-Dissolved	G.		98.7		%		70-130	02-OCT-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	02-OCT-19
Beryllium (Be)-Dissolve	d		100.4	WOB	%		70-130	02-OCT-19
Bismuth (Bi)-Dissolved	-		97.2		%		70-130	02-OCT-19
Boron (B)-Dissolved			N/A	MS-B	%		-	02-OCT-19
Cadmium (Cd)-Dissolve	ed		97.3		%		70-130	02-OCT-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	02-OCT-19
Cesium (Cs)-Dissolved			103.4	5 5	%		70-130	02-OCT-19
Chromium (Cr)-Dissolve	ed		97.2		%		70-130	02-OCT-19
Cobalt (Co)-Dissolved			97.9		%		70-130	02-OCT-19
Copper (Cu)-Dissolved			N/A	MS-B	%		-	02-OCT-19
()			-	5				JE 001 10



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Test M	atrix Refe	erence Resul	t Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA W	/ater						
Batch R4854348							
WG3179005-4 MS	L23	57669-1		%		70.400	00 007 40
Iron (Fe)-Dissolved Lead (Pb)-Dissolved		95.6 97.1		%		70-130	02-OCT-19
Lithium (Li)-Dissolved		95.9		%		70-130	02-OCT-19
, ,		95.9 N/A	MC D	%		70-130	02-OCT-19
Magnesium (Mg)-Dissolved			MS-B			-	02-OCT-19
Manganese (Mn)-Dissolved		N/A	MS-B	%		-	02-OCT-19
Molybdenum (Mo)-Dissolve	a	100.3		%		70-130	02-OCT-19
Nickel (Ni)-Dissolved		95.7		%		70-130	02-OCT-19
Phosphorus (P)-Dissolved		97.1		%		70-130	02-OCT-19
Potassium (K)-Dissolved		N/A	MS-B	%		-	02-OCT-19
Rubidium (Rb)-Dissolved		93.3		%		70-130	02-OCT-19
Selenium (Se)-Dissolved		99.4		%		70-130	02-OCT-19
Silicon (Si)-Dissolved		102.5		%		70-130	02-OCT-19
Silver (Ag)-Dissolved		84.9		%		70-130	02-OCT-19
Sodium (Na)-Dissolved		N/A	MS-B	%		-	02-OCT-19
Strontium (Sr)-Dissolved		N/A	MS-B	%		-	02-OCT-19
Sulfur (S)-Dissolved		109.5		%		70-130	02-OCT-19
Tellurium (Te)-Dissolved		97.8		%		70-130	02-OCT-19
Thallium (TI)-Dissolved		96.5		%		70-130	02-OCT-19
Thorium (Th)-Dissolved		92.7		%		70-130	02-OCT-19
Tin (Sn)-Dissolved		97.5		%		70-130	02-OCT-19
Titanium (Ti)-Dissolved		101.3		%		70-130	02-OCT-19
Tungsten (W)-Dissolved		101.8		%		70-130	02-OCT-19
Uranium (U)-Dissolved		100.5		%		70-130	02-OCT-19
Vanadium (V)-Dissolved		100.8		%		70-130	02-OCT-19
Zinc (Zn)-Dissolved		95.1		%		70-130	02-OCT-19
Zirconium (Zr)-Dissolved		99.5		%		70-130	02-OCT-19
NH3-F-VA W	/ater						
Batch R4842272							
WG3172153-3 DUP Ammonia, Total (as N)		52708-1 0050 <0.00	50 RPD-NA	, mg/L	N/A	20	25-SEP-19
WG3172153-2 LCS Ammonia, Total (as N)		98.8		%		85-115	25-SEP-19
WG3172153-1 MB Ammonia, Total (as N)		<0.00	50	mg/L		0.005	25-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA Batch R4842272	Water							
WG3172153-4 MS Ammonia, Total (as N)		L2352708-2	98.0		%		75-125	25-SEP-19
NO2-L-IC-N-VA	Water							
Batch R4839125 WG3171466-3 DUP Nitrite (as N)		L2352487-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-SEP-19
WG3171466-2 LCS Nitrite (as N)			99.9		%		90-110	24-SEP-19
WG3171466-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	24-SEP-19
WG3171466-4 MS Nitrite (as N)		L2352487-5	97.6		%		75-125	24-SEP-19
NO3-L-IC-N-VA	Water							
Batch R4839125 WG3171466-3 DUP Nitrate (as N)		L2352487-1 2.93	2.93		mg/L	0.2	20	24-SEP-19
WG3171466-2 LCS Nitrate (as N)			105.8		%	0.2	90-110	24-SEP-19
WG3171466-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	24-SEP-19
WG3171466-4 MS Nitrate (as N)		L2352487-5	105.7		%		75-125	24-SEP-19
PH-PCT-VA	Water							
Batch R4841433 WG3171564-2 CRM pH		VA-PH7-BUF	7.02		5H		0074	05 05D 40
рп WG3171564-4 DUP pH		L2352708-1 7.78	7.80	J	рН рН	0.02	6.9-7.1 0.3	25-SEP-19 25-SEP-19
SO4-IC-N-VA	Water			·	•	0.02	0.0	_0 0
Batch R4839125								
WG3171466-3 DUP Sulfate (SO4)		L2352487-1 12.2	12.2		mg/L	0.2	20	24-SEP-19
WG3171466-2 LCS Sulfate (SO4)			106.2		%		90-110	24-SEP-19
WG3171466-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	24-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-VA Batch R4839125	Water							
WG3171466-4 MS Sulfate (SO4)		L2352487-5	101.8		%		75-125	24-SEP-19
TDS-VA	Water							
Batch R4850467 WG3176194-3 DUP Total Dissolved Solids		L2352492-1 280	284		mg/L	1.6	20	29-SEP-19
WG3176194-6 DUP Total Dissolved Solids		L2352708-6 249	253		mg/L	1.6	20	29-SEP-19
WG3176194-2 LCS Total Dissolved Solids			103.9		%		85-115	29-SEP-19
WG3176194-5 LCS Total Dissolved Solids			101.1		%		85-115	29-SEP-19
WG3176194-1 MB Total Dissolved Solids			<10		mg/L		10	29-SEP-19
WG3176194-4 MB Total Dissolved Solids			<10		mg/L		10	29-SEP-19
Batch R4851640								
WG3177160-3 DUP Total Dissolved Solids		L2349427-3 489	490		mg/L	0.3	20	30-SEP-19
WG3177160-2 LCS Total Dissolved Solids			108.1		%		85-115	30-SEP-19
WG3177160-1 MB Total Dissolved Solids			<10		mg/L		10	30-SEP-19
VH-HSFID-VA	Water							
Batch R4824470								
WG3177586-3 DUP Volatile Hydrocarbons (\)	VH6-10)	L2356760-2 <0.10	<0.10	RPD-NA	mg/L	N/A	30	01-OCT-19
WG3177586-2 LCS Volatile Hydrocarbons (V	√H6-10)		88.6		%		70-130	01-OCT-19
WG3177586-1 MB Volatile Hydrocarbons (\)	√H6-10)		<0.10		mg/L		0.1	01-OCT-19
Batch R4849255								
WG3175700-3 DUP Volatile Hydrocarbons (\)	√H6-10)	L2352495-1 <0.10	<0.10	RPD-NA	mg/L	N/A	30	29-SEP-19
WG3175700-2 LCS Volatile Hydrocarbons (\	√H6-10)		92.1		%		70-130	29-SEP-19
WG3175700-1 MB								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VH-HSFID-VA	Water							
Batch R484925 WG3175700-1 MB Volatile Hydrocarbons			<0.10		mg/L		0.1	29-SEP-19
VOC-HSMS-VA	Water							
Batch R482127	0							
WG3177586-2 LCS Bromodichloromethan			92.4		%		70-130	01-OCT-19
Bromoform			83.8		%		70-130	01-OCT-19
Carbon Tetrachloride			106.9		%		70-130	01-OCT-19
Chlorobenzene			107.0		%		70-130	01-OCT-19
Dibromochloromethan	ie		95.8		%		70-130	01-OCT-19
Chloroethane			112.0		%		60-140	01-OCT-19
Chloroform			97.5		%		70-130	01-OCT-19
Chloromethane			156.1	LCS-ND	%		60-140	01-OCT-19
1,2-Dichlorobenzene			109.1		%		70-130	01-OCT-19
1,3-Dichlorobenzene			94.0		%		70-130	01-OCT-19
1,4-Dichlorobenzene			111.0		%		70-130	01-OCT-19
1,1-Dichloroethane			105.6		%		70-130	01-OCT-19
1,2-Dichloroethane			92.7		%		70-130	01-OCT-19
1,1-Dichloroethylene			106.2		%		70-130	01-OCT-19
cis-1,2-Dichloroethyler	ne		95.8		%		70-130	01-OCT-19
trans-1,2-Dichloroethy	rlene		115.4		%		70-130	01-OCT-19
Dichloromethane			119.2		%		60-140	01-OCT-19
1,2-Dichloropropane			85.2		%		70-130	01-OCT-19
cis-1,3-Dichloropropyle	ene		91.9		%		70-130	01-OCT-19
trans-1,3-Dichloroprop	ylene		88.8		%		70-130	01-OCT-19
1,1,1,2-Tetrachloroeth	ane		101.0		%		70-130	01-OCT-19
1,1,2,2-Tetrachloroeth	ane		87.4		%		70-130	01-OCT-19
Tetrachloroethylene			106.1		%		70-130	01-OCT-19
1,1,1-Trichloroethane			105.4		%		70-130	01-OCT-19
1,1,2-Trichloroethane			86.0		%		70-130	01-OCT-19
Trichloroethylene			105.2		%		70-130	01-OCT-19
Trichlorofluoromethan	е		134.5		%		60-140	01-OCT-19
Vinyl Chloride			147.9	LCS-ND	%		60-140	01-OCT-19
WG3177586-1 MB								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4821270								
WG3177586-1 MB								
Bromodichloromethane			<0.0010		mg/L		0.001	01-OCT-19
Bromoform			<0.0010		mg/L		0.001	01-OCT-19
Carbon Tetrachloride			<0.00050		mg/L		0.0005	01-OCT-19
Chlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
Dibromochloromethane			<0.0010		mg/L		0.001	01-OCT-19
Chloroethane			<0.0010		mg/L		0.001	01-OCT-19
Chloroform			<0.0010		mg/L		0.001	01-OCT-19
Chloromethane			<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	01-OCT-19
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
cis-1,2-Dichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
trans-1,2-Dichloroethyler	ne		<0.0010		mg/L		0.001	01-OCT-19
Dichloromethane			<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichloropropane			<0.0010		mg/L		0.001	01-OCT-19
cis-1,3-Dichloropropylen	е		<0.00050		mg/L		0.0005	01-OCT-19
trans-1,3-Dichloropropyle	ene		<0.00050		mg/L		0.0005	01-OCT-19
1,1,1,2-Tetrachloroethan	ne		<0.0010		mg/L		0.001	01-OCT-19
1,1,2,2-Tetrachloroethan	ne		<0.00020		mg/L		0.0002	01-OCT-19
Tetrachloroethylene			<0.0010		mg/L		0.001	01-OCT-19
1,1,1-Trichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	01-OCT-19
Trichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
Trichlorofluoromethane			<0.0010		mg/L		0.001	01-OCT-19
Vinyl Chloride			<0.00040		mg/L		0.0004	01-OCT-19
Batch R4846568								
WG3175700-2 LCS								
Bromodichloromethane			97.0		%		70-130	28-SEP-19
Bromoform			122.6		%		70-130	28-SEP-19
Carbon Tetrachloride			114.0		%		70-130	28-SEP-19
Chlorobenzene			98.1		%		70-130	28-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R484656	8							
WG3175700-2 LCS Dibromochloromethan			110.0		%		70-130	28-SEP-19
Chloroethane			105.0		%		60-140	28-SEP-19
Chloroform			101.9		%		70-130	28-SEP-19
Chloromethane			129.7		%		60-140	28-SEP-19
1,2-Dichlorobenzene			99.2		%		70-130	28-SEP-19
1,3-Dichlorobenzene			93.3		%		70-130	28-SEP-19
1,4-Dichlorobenzene			98.6		%		70-130	28-SEP-19
1,1-Dichloroethane			97.4		%		70-130	28-SEP-19
1,2-Dichloroethane			97.5		%		70-130	28-SEP-19
1,1-Dichloroethylene			99.8		%		70-130	28-SEP-19
cis-1,2-Dichloroethyler	ne		97.9		%		70-130	28-SEP-19
trans-1,2-Dichloroethy	rlene		97.5		%		70-130	28-SEP-19
Dichloromethane			96.1		%		60-140	28-SEP-19
1,2-Dichloropropane			100.5		%		70-130	28-SEP-19
cis-1,3-Dichloropropyle	ene		72.6		%		70-130	28-SEP-19
trans-1,3-Dichloroprop	ylene		59.8	LCS-ND	%		70-130	28-SEP-19
1,1,1,2-Tetrachloroeth	ane		98.3		%		70-130	28-SEP-19
1,1,2,2-Tetrachloroeth	ane		99.3		%		70-130	28-SEP-19
Tetrachloroethylene			115.0		%		70-130	28-SEP-19
1,1,1-Trichloroethane			93.0		%		70-130	28-SEP-19
1,1,2-Trichloroethane			94.6		%		70-130	28-SEP-19
Trichloroethylene			101.6		%		70-130	28-SEP-19
Trichlorofluoromethan	е		124.1		%		60-140	28-SEP-19
Vinyl Chloride			119.7		%		60-140	28-SEP-19
WG3175700-1 MB Bromodichloromethan	ıe.		<0.0010		mg/L		0.001	28-SEP-19
Bromoform			<0.0010		mg/L		0.001	28-SEP-19
Carbon Tetrachloride			<0.00050)	mg/L		0.0005	28-SEP-19
Chlorobenzene			<0.0010	•	mg/L		0.001	28-SEP-19
Dibromochloromethan	ne		<0.0010		mg/L		0.001	28-SEP-19
Chloroethane			<0.0010		mg/L		0.001	28-SEP-19
Chloroform			<0.0010		mg/L		0.001	28-SEP-19
Chloromethane			<0.0050		mg/L		0.005	28-SEP-19
1,2-Dichlorobenzene			<0.00050)	mg/L		0.0005	28-SEP-19
1,2 510111010501120110			10.00000	•	g, <u>-</u>		0.0000	20-0L1 -18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4846	568							
WG3175700-1 ME			0.0040				0.004	
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	28-SEP-19
1,4-Dichlorobenzene	9		<0.0010		mg/L		0.001	28-SEP-19
1,1-Dichloroethane			<0.0010		mg/L		0.001	28-SEP-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	28-SEP-19
1,1-Dichloroethylene			<0.0010		mg/L		0.001	28-SEP-19
cis-1,2-Dichloroethy			<0.0010		mg/L		0.001	28-SEP-19
trans-1,2-Dichloroet	hylene		<0.0010		mg/L		0.001	28-SEP-19
Dichloromethane			<0.0050		mg/L		0.005	28-SEP-19
1,2-Dichloropropane)		<0.0010		mg/L		0.001	28-SEP-19
cis-1,3-Dichloroprop	ylene		<0.00050		mg/L		0.0005	28-SEP-19
trans-1,3-Dichloropr	opylene		<0.00050		mg/L		0.0005	28-SEP-19
1,1,1,2-Tetrachloroe	ethane		<0.0010		mg/L		0.001	28-SEP-19
1,1,2,2-Tetrachloroe	ethane		<0.00020		mg/L		0.0002	28-SEP-19
Tetrachloroethylene			<0.0010		mg/L		0.001	28-SEP-19
1,1,1-Trichloroethan	e		<0.0010		mg/L		0.001	28-SEP-19
1,1,2-Trichloroethan	е		<0.00050		mg/L		0.0005	28-SEP-19
Trichloroethylene			<0.0010		mg/L		0.001	28-SEP-19
Trichlorofluorometha	ane		<0.0010		mg/L		0.001	28-SEP-19
Vinyl Chloride			<0.00040		mg/L		0.0004	28-SEP-19
VOC7-HSMS-VA	Water							
Batch R48212	270							
WG3177586-3 DL Benzene	JP	L2356760-2 < 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Methyl t-butyl ether	(MTBE)	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Styrene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Toluene		< 0.00045	<0.00045	RPD-NA	mg/L	N/A	30	01-OCT-19
meta- & para-Xylene	e	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
ortho-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
WG3177586-2 LC	s							
Benzene			95.7		%		70-130	01-OCT-19
Ethylbenzene			96.7		%		70-130	01-OCT-19
Methyl t-butyl ether	(M⊤BE)		106.2		%		70-130	01-OCT-19
Styrene			85.2		%		70-130	01-OCT-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
Batch R4821270 WG3177586-2 LCS Toluene	0		92.6		%		70.420	04 007 40
meta- & para-Xylene			104.6		%		70-130 70-130	01-OCT-19 01-OCT-19
ortho-Xylene			95.6		%			
WG3177586-1 MB			95.0		70		70-130	01-OCT-19
Benzene			<0.00050		mg/L		0.0005	01-OCT-19
Ethylbenzene			<0.00050		mg/L		0.0005	01-OCT-19
Methyl t-butyl ether (M	TBE)		<0.00050		mg/L		0.0005	01-OCT-19
Styrene			<0.00050		mg/L		0.0005	01-OCT-19
Toluene			<0.00045		mg/L		0.00045	01-OCT-19
meta- & para-Xylene			<0.00050		mg/L		0.0005	01-OCT-19
ortho-Xylene			<0.00050		mg/L		0.0005	01-OCT-19
Batch R4846568	3							
WG3175700-3 DUP Benzene		L2352495-1 <0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
Methyl t-butyl ether (M	TBE)	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
Styrene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
Toluene		< 0.00045	<0.00045	RPD-NA	mg/L	N/A	30	28-SEP-19
meta- & para-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
ortho-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	28-SEP-19
WG3175700-2 LCS								
Benzene			97.8		%		70-130	28-SEP-19
Ethylbenzene			92.4		%		70-130	28-SEP-19
Methyl t-butyl ether (M	TBE)		97.5		%		70-130	28-SEP-19
Styrene			88.3		%		70-130	28-SEP-19
Toluene			92.8		%		70-130	28-SEP-19
meta- & para-Xylene			95.9		%		70-130	28-SEP-19
ortho-Xylene			91.9		%		70-130	28-SEP-19
WG3175700-1 MB Benzene			<0.00050		mg/L		0.0005	28-SEP-19
Ethylbenzene			<0.00050		mg/L		0.0005	28-SEP-19
Methyl t-butyl ether (M	TBE)		<0.00050		mg/L		0.0005	28-SEP-19
Styrene			<0.00050		mg/L		0.0005	28-SEP-19
Toluene			<0.00045		mg/L		0.00045	28-SEP-19



Workorder: L2352708 Report Date: 10-OCT-19 Page 19 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
Batch R4846568								
WG3175700-1 MB							0.0005	
meta- & para-Xylene			<0.00050		mg/L		0.0005	28-SEP-19
ortho-Xylene			<0.00050		mg/L		0.0005	28-SEP-19

Workorder: L2352708 Report Date: 10-OCT-19

Client: GHD Limited Page 20 of 21

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
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.

1-19

Workorder: L2352708 Report Date: 10-OCT-19

Client: GHD Limited

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Page 21 of 21

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	22-SEP-19 11:50	25-SEP-19 09:29	0.25	70	hours	EHTR-FM
	2	22-SEP-19 12:20	25-SEP-19 09:29	0.25	69	hours	EHTR-FM
	3	22-SEP-19 13:45	25-SEP-19 09:29	0.25	68	hours	EHTR-FM
	4	22-SEP-19 14:20	25-SEP-19 09:29	0.25	67	hours	EHTR-FM
	5	22-SEP-19 13:30	25-SEP-19 09:29	0.25	68	hours	EHTR-FM
	6	22-SEP-19 15:20	25-SEP-19 09:29	0.25	66	hours	EHTR-FM
	7	22-SEP-19 15:25	25-SEP-19 09:29	0.25	66	hours	EHTR-FM
	8	22-SEP-19 16:15	25-SEP-19 09:29	0.25	65	hours	EHTR-FM
	9	22-SEP-19 16:25	25-SEP-19 09:29	0.25	65	hours	EHTR-FM
	10	23-SEP-19 09:45	25-SEP-19 09:29	0.25	48	hours	EHTR-FM
	11	23-SEP-19 09:15	25-SEP-19 09:29	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2352708 were received on 24-SEP-19 08:50.

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 predetermined 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 Enuir

PO / AFE:

Released by:

LSD:

73515713-2

Phase 52 - Campbell River GW

SHIPMENT RELEASE (client use)

Chain of Custody (COC) / Analytical Request Form

Requisitioner:

Location:

2352708-COEC

COC Number: 17 -

of

FINAL SHIPMENT RECEPTION (lab use only)

(ALS)	Environmental Canada To	oll Free: 1 800 668 9878														
	www.alsglobal.com															
Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)													
company:	GHD Limited	Select Report Format: PDF EXCEL EDD (DIGITAL)	 Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surtharges apply 													
Contact:	Airesse MacPhee	Quality Control (QC) Report with Report ☑ YES ☐ NO	\$ 4 day [P4-20%]													
hone:	604 248 3661	Compare Results to Criteria on Report - provide details below if box checked	Same Day, Weekend or Statutory holiday [E2 -200% 및													
	Company address below will appear on the final report	Select Distribution: 🛛 EMAIL 🔲 MAIL 🔲 FAX	Same Bay, Neckting of States of St													
Street	455 Phillip Street	Email 1 or Fax airesse macphee@ghd.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm													
City/Province:	Waterloo, ON	Email 2 Laurie Clark@ghd.com, Natasha.Turl@ghd.com	For tests that can not be performed according to the service level selected, you will be contacted.													
ostal Code:,	N2L 3X2	Email 3 Michaela.Dyck@ghd.com,Lainey.Kong@ghd.com	Analysis Request													
nvoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	PFP E													
company:	• .	Email 1 or Fax APinvoices-735@ghd.com	(8) (8) Tu													
Contact:		Email 2														
	Project Information	Oil and Gas Required Fields (client use)														
LS Account	# / Quote #: Q72562	AFE/Cost Center: PO# .														
lob#:	056484-52	Major/Minor Code: Routing Code:														

ALS Lab Work Order# (lab use only):		ALS Contact:	Selam W	V. Sampler:	Murl			(C) .				ed Me	/Hd/						ES O	is ha	R. 9.	
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			(electronic COC only)					Frozen			SIF Observatio			ations	Yes]	No				
Are samples taken from a Regulated DW System?		nald	ina tii	MPCZ	<u> </u>		ice Pac	ks 🕡	I ce	Cubes		Custo	ody sea	al intaci	t Yes	[]	No]	
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INITIAL SHIPMENT RECEPTION (lab use only)

WHITE - LABORATORY COPY

Time:

YELLOW - CLIENT COPY

Received by:

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.

Received by:



GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 25-SEP-19

Report Date: 10-OCT-19 17:20 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2353609Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River GW

Selam Worku Account Manager

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

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2353609 CONTD....

PAGE 2 of 15 Version: FINAL

Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
98.2		2.0	uS/cm		26-SEP-19	R4844392
46.3		0.50	mg/L		26-SEP-19	
7.77		0.10	pН		26-SEP-19	R4844392
70		13	mg/L		30-SEP-19	R4851422
			· ·			
47.5		1.0	mg/L		26-SEP-19	R4844392
<1.0		1.0	mg/L		26-SEP-19	R4844392
<1.0		1.0	mg/L		26-SEP-19	R4844392
47.5		1.0	mg/L		26-SEP-19	R4844392
<0.0050		0.0050	mg/L		27-SEP-19	R4849527
0.92		0.50	mg/L		25-SEP-19	R4847789
<0.020		0.020	mg/L		25-SEP-19	R4847789
0.0627		0.0051	mg/L		27-SEP-19	
0.0627		0.0050	mg/L		25-SEP-19	R4847789
<0.0010		0.0010	mg/L		25-SEP-19	R4847789
2.42		0.30	mg/L		25-SEP-19	R4847789
FIELD					26-SEP-19	R4846308
FIELD					26-SEP-19	R4842468
0.0053		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
0.00051		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
0.00065		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
0.018		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4844376
15.7		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
0.00029		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
0.00045		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.010		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
1.74		0.0050	mg/L	26-SEP-19	26-SEP-19	R4844376
<0.00010		0.00010	•	26-SEP-19	26-SEP-19	R4844376
		0.0000050	•	26-SEP-19	27-SEP-19	R4847852
				26-SEP-19	26-SEP-19	R4844376
			•			R4844376
<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
	46.3 7.77 70 47.5 <1.0 <1.0 47.5 <0.0050 0.92 <0.020 0.0627 0.0627 <0.0010 2.42 FIELD FIELD FIELD 0.0053 <0.00010 0.00051 0.00055 <0.00010 <0.000050 15.7 <0.000010 0.00029 <0.00010 0.00029 <0.00010 <0.000050 <0.00010 <1.74 <0.00010 <0.000050 0.0010 1.74 <0.00010 <0.000050 0.000161 <0.00050	46.3 7.77 70 47.5 <1.0 <1.0 47.5 <0.0050 0.92 <0.020 0.0627 0.0627 <0.0010 2.42 FIELD FIELD FIELD O.0053 <0.00010 0.00051 0.00055 <0.00010 <0.000050 0.018 <0.000050 15.7 <0.000010 0.00029 <0.00010 0.00029 <0.00010 <0.000050 <0.00010 <1.74 <0.00010 <0.000050 <0.00010 <1.74 <0.00010 <0.000050 0.000161 <0.000050	46.3 0.50 7.77 0.10 70 13 47.5 1.0 <1.0	46.3 0.50 mg/L 7.77 0.10 pH 70 13 mg/L 47.5 1.0 mg/L <1.0	46.3 7.77 0.10 pH 70 13 mg/L 47.5 1.0 mg/L <1.0 47.5 1.0 mg/L <1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 1.0 mg/L 47.5 0.0050 0.0050 mg/L 0.022 0.020 0.020 mg/L 0.0627 0.0051 mg/L 0.0627 0.0050 mg/L 2.42 0.30 mg/L FIELD FIELD FIELD 0.0053 0.0010 mg/L 2.42 0.30 mg/L FIELD 0.00051 0.00010 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000010 0.00010 mg/L 26-SEP-19 40.000010 0.00010 mg/L 26-SEP-19 40.000010 0.00010 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.00010 0.00010 mg/L 26-SEP-19 40.00010 0.00010 mg/L 26-SEP-19 40.00010 0.00010 mg/L 26-SEP-19 40.00010 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.00010 0.0010 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19 40.00010 0.0010 mg/L 26-SEP-19 40.000050 0.000050 mg/L 26-SEP-19	46.3 7.77 70 13 mg/L 26-SEP-19 70 13 mg/L 30-SEP-19 47.5 1.0 mg/L 26-SEP-19 26-SEP-19 26-SEP-19 30-SEP-19 47.5 1.0 mg/L 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 27-SEP-19 0.020 0.020 mg/L 27-SEP-19 0.0627 0.0050 mg/L 25-SEP-19 0.0627 0.0051 mg/L 25-SEP-19 0.0627 0.0010 0.0010 mg/L 25-SEP-19 26-SEP-19 26-SEP-19 26-SEP-19 0.0053 0.0010 mg/L 26-SEP-19 26-SEP-19 0.00051 0.00051 0.00010 mg/L 26-SEP-19 26-SEP-19 26-SEP-19 0.00051 0.00010 mg/L 26-SEP-19 26-

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

L2353609 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-1 WG-56484-230919-NT-12 Sampled By: N. Turl on 23-SEP-19 @ 13:15 Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	0.323		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	0.000108		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	4.17		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Sodium (Na)-Dissolved	1.39		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.0257		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	0.60		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000024		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.00349		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
L2353609-2 WG-56484-230919-NT-13 Sampled By: N. Turl on 23-SEP-19 @ 13:40 Matrix: GW							
Physical Tests							
Conductivity	176		2.0	uS/cm		26-SEP-19	R4844392
Hardness (as CaCO3)	85.6		0.50	mg/L		26-SEP-19	
рН	8.11		0.10	pН		26-SEP-19	R4844392
Total Dissolved Solids	118		13	mg/L		30-SEP-19	R4851422
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	89.3		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Total (as CaCO3)	89.3		1.0	mg/L		26-SEP-19	R4844392
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		27-SEP-19	R4849527
Chloride (CI)	4.16		0.50	mg/L		25-SEP-19	R4847789
Fluoride (F)	<0.020		0.020	mg/L		25-SEP-19	R4847789
Nitrate and Nitrite (as N)	0.146		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.146		0.0050	mg/L		25-SEP-19	R4847789
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4847789
Sulfate (SO4)	2.51		0.30	mg/L		25-SEP-19	R4847789
Dissolved Metals						00.055.15	
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4846308
Dissolved Metals Filtration Location	FIELD		0.0010	"	00.055.46	26-SEP-19	R4842468
Aluminum (Al)-Dissolved	0.0048		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376

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

L2353609 CONTD.... PAGE 4 of 15 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-2 WG-56484-230919-NT-13 Sampled By: N. Turl on 23-SEP-19 @ 13:40 Matrix: GW							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00055		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Barium (Ba)-Dissolved	0.00217		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Boron (B)-Dissolved	0.015		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Calcium (Ca)-Dissolved	30.0		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00031		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Copper (Cu)-Dissolved	0.00095		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Magnesium (Mg)-Dissolved	2.58		0.0050	mg/L	26-SEP-19	26-SEP-19	R4844376
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4847852
Molybdenum (Mo)-Dissolved	0.000169		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Potassium (K)-Dissolved	0.568		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	0.000162		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	4.34		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19		R4844376
Sodium (Na)-Dissolved	2.85		0.050	mg/L	26-SEP-19		R4844376
Strontium (Sr)-Dissolved	0.0535		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	0.56		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19		R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000056		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.00261		0.00050	mg/L	26-SEP-19		R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
L2353609-3 WG-56484-230919-NT-14 Sampled By: N. Turl on 23-SEP-19 @ 14:20 Matrix: GW							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-3 WG-56484-230919-NT-14 Sampled By: N. Turl on 23-SEP-19 @ 14:20 Matrix: GW							
Physical Tests							
Conductivity	243		2.0	uS/cm		26-SEP-19	R4844392
Hardness (as CaCO3)	131		0.50	mg/L		26-SEP-19	
Hq	8.14		0.10	pН		26-SEP-19	R4844392
Total Dissolved Solids	167		20	mg/L		30-SEP-19	R4851422
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	129		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Total (as CaCO3)	129		1.0	mg/L		26-SEP-19	R4844392
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		27-SEP-19	R4849527
Chloride (CI)	6.43		0.50	mg/L		25-SEP-19	R4847789
Fluoride (F)	<0.020		0.020	mg/L		25-SEP-19	R4847789
Nitrate and Nitrite (as N)	0.585		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.585		0.0050	mg/L		25-SEP-19	R4847789
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4847789
Sulfate (SO4)	2.89		0.30	mg/L		25-SEP-19	R4847789
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4846308
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4842468
Aluminum (Al)-Dissolved	0.0032		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Barium (Ba)-Dissolved	0.00603		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Boron (B)-Dissolved	0.015		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Calcium (Ca)-Dissolved	35.0		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00209		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Magnesium (Mg)-Dissolved	10.5		0.0050	mg/L	26-SEP-19	26-SEP-19	R4844376
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4847852
Molybdenum (Mo)-Dissolved	0.000060		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-3 WG-56484-230919-NT-14							
Sampled By: N. Turl on 23-SEP-19 @ 14:20							
Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	0.435		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	0.00031		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	0.000153		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	8.49		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Sodium (Na)-Dissolved	3.86		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.0694		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	0.80		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000186		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.00300		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
L2353609-4 WG-56484-230919-NT-15 Sampled By: N. Turl on 23-SEP-19 @ 16:00							
Matrix: GW							
Physical Tests				0.4		00 055 40	
Conductivity	165		2.0	uS/cm		26-SEP-19	R4844392
Hardness (as CaCO3)	83.3		0.50	mg/L		26-SEP-19	
pH	8.13		0.10	pН		26-SEP-19	R4844392
Total Dissolved Solids	115		13	mg/L		30-SEP-19	R4851422
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	84.3		1.0	mg/L		26-SEP-19	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Total (as CaCO3)	84.3		1.0	mg/L		26-SEP-19	R4844392
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		27-SEP-19	R4849527
Chloride (CI)	1.71		0.50	mg/L		25-SEP-19	R4847789
Fluoride (F)	<0.020		0.020	mg/L		25-SEP-19	R4847789
Nitrate and Nitrite (as N)	0.181		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.181		0.0050	mg/L		25-SEP-19	R4847789
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4847789
Sulfate (SO4)	2.73		0.30	mg/L		25-SEP-19	R4847789
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4846308
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4842468
Aluminum (Al)-Dissolved	0.0047		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-4 WG-56484-230919-NT-15							
Sampled By: N. Turl on 23-SEP-19 @ 16:00 Matrix: GW							
Matrix: GW Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00232		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Barium (Ba)-Dissolved	0.00386		0.00010	mg/L	26-SEP-19		R4844376
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Calcium (Ca)-Dissolved	26.0		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00060		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Magnesium (Mg)-Dissolved	4.45		0.0050	mg/L	26-SEP-19	26-SEP-19	R4844376
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4847852
Molybdenum (Mo)-Dissolved	0.000109		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Potassium (K)-Dissolved	1.07		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	0.000183		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	5.66		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Sodium (Na)-Dissolved	1.39		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.0360		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	0.80		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000127		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.0217		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
L2353609-5 WG-56484-230919-NT-16 Sampled By: N. Turl on 23-SEP-19 @ 16:40 Matrix: GW * Refer to Referenced Information for Qualifiers (if any) and							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-5 WG-56484-230919-NT-16 Sampled By: N. Turl on 23-SEP-19 @ 16:40 Matrix: GW							
Physical Tests							
Conductivity	624		2.0	uS/cm		26-SEP-19	R4844392
Hardness (as CaCO3)	187		0.50	mg/L		26-SEP-19	
pH	7.99		0.10	pН		26-SEP-19	R4844392
Total Dissolved Solids	368		20	mg/L		30-SEP-19	R4851422
Anions and Nutrients				J			
Alkalinity, Bicarbonate (as CaCO3)	353		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Total (as CaCO3)	353		1.0	mg/L		26-SEP-19	R4844392
Ammonia, Total (as N)	10.5		0.25	mg/L		27-SEP-19	R4849527
Chloride (CI)	10.3		0.50	mg/L		25-SEP-19	R4847789
Fluoride (F)	<0.030	DLCI	0.030	mg/L		25-SEP-19	R4847789
Nitrate and Nitrite (as N)	0.0230		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.0184		0.0050	mg/L		25-SEP-19	R4847789
Nitrite (as N)	0.0046		0.0010	mg/L		25-SEP-19	R4847789
Sulfate (SO4)	2.84		0.30	mg/L		25-SEP-19	R4847789
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4846308
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4842468
Aluminum (Al)-Dissolved	0.0019		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Barium (Ba)-Dissolved	0.0303		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.00050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Boron (B)-Dissolved	0.498		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cadmium (Cd)-Dissolved	0.0000833		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Calcium (Ca)-Dissolved	55.8		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cobalt (Co)-Dissolved	0.00134		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Copper (Cu)-Dissolved	0.0133		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Iron (Fe)-Dissolved	0.031		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Magnesium (Mg)-Dissolved	11.7		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Manganese (Mn)-Dissolved	2.28		0.0000	mg/L	26-SEP-19	26-SEP-19	R4844376
Mercury (Hg)-Dissolved	<0.0000050		0.00010	mg/L	26-SEP-19	27-SEP-19	R4847852
Molybdenum (Mo)-Dissolved	0.000792		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Nickel (Ni)-Dissolved				mg/L	26-SEP-19	26-SEP-19	R4844376
	0.00173		0.00050	-			
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-5 WG-56484-230919-NT-16							
Sampled By: N. Turl on 23-SEP-19 @ 16:40 Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	10.5		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	0.00048		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	13.5		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Sodium (Na)-Dissolved	49.7		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.297		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	0.91		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000384		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.00180		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Chloroform Chloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19 04-OCT-19	R4846568
1,2-Dichlorobenzene	<0.0050 <0.00050		0.0050 0.00050	mg/L mg/L	01-OCT-19 01-OCT-19	04-OCT-19	R4846568 R4846568
1,3-Dichlorobenzene	<0.0010		0.00030	mg/L	01-OCT-19	04-OCT-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	01-OCT-19		R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
cis-1,3-Dichloropropylene	<0.0050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19		R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4851265

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-5 WG-56484-230919-NT-16 Sampled By: N. Turl on 23-SEP-19 @ 16:40 Matrix: GW							
Volatile Organic Compounds							
Ethylbenzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Styrene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	01-OCT-19	04-OCT-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Toluene	<0.00045		0.00045	mg/L	01-OCT-19	01-OCT-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Vinyl Chloride	<0.0040		0.00040	mg/L	01-OCT-19	04-OCT-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Xylenes	<0.00075		0.00030	mg/L	01 001 10	01-OCT-19	114040300
Surrogate: 4-Bromofluorobenzene (SS)	84.3		70-130	// // // // // // // // // // // // //		01-OCT-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	100.5		70-130	%		01-OCT-19	R4846568
Hydrocarbons	100.5		70-130	/0		01-001-19	N4040300
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	01-OCT-19	02-OCT-19	R4849255
VPH (C6-C10)	<0.10		0.10	mg/L		02-OCT-19	
Surrogate: 3,4-Dichlorotoluene (SS)	90.7		70-130	%		02-OCT-19	R4849255
L2353609-6 WG-56484-230919-NT-17 Sampled By: N. Turl on 23-SEP-19 @ 16:45 Matrix: GW							
Physical Tests							
Conductivity	634		2.0	uS/cm		26-SEP-19	R4844392
Hardness (as CaCO3)	187		0.50	mg/L		26-SEP-19	
pH	8.02		0.10	pН		26-SEP-19	R4844392
Total Dissolved Solids	384		20	mg/L		30-SEP-19	R4851422
Anions and Nutrients				9/ =			
Alkalinity, Bicarbonate (as CaCO3)	359		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4844392
Alkalinity, Total (as CaCO3)	359		1.0	mg/L		26-SEP-19	R4844392
Ammonia, Total (as N)	10.6		0.25	mg/L		27-SEP-19	R4849527
Chloride (CI)	10.3		0.50	mg/L		25-SEP-19	R4847789
Fluoride (F)	<0.032	DLCI	0.032	mg/L		25-SEP-19	R4847789
Nitrate and Nitrite (as N)	0.0239		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.0186		0.0050	mg/L		25-SEP-19	R4847789
Nitrite (as N)	0.0052		0.0010	mg/L		25-SEP-19	R4847789
Sulfate (SO4)	2.84		0.30	mg/L		25-SEP-19	R4847789
Dissolved Metals							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-6 WG-56484-230919-NT-17 Sampled By: N. Turl on 23-SEP-19 @ 16:45 Matrix: GW							
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4846308
Dissolved Metals Filtration Location	FIELD						R4842468
Aluminum (Al)-Dissolved	0.0014		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00022		0.00010	mg/L	26-SEP-19		R4844376
Barium (Ba)-Dissolved	0.0296		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19		R4844376
Bismuth (Bi)-Dissolved	<0.00050		0.000050	mg/L	26-SEP-19		R4844376
Boron (B)-Dissolved	0.478		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cadmium (Cd)-Dissolved	0.0000796		0.0000050		26-SEP-19	26-SEP-19	R4844376
Calcium (Ca)-Dissolved	54.9		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Cobalt (Co)-Dissolved	0.00131		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Copper (Cu)-Dissolved	0.0136		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Iron (Fe)-Dissolved	0.032		0.010	mg/L	26-SEP-19	26-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376
Magnesium (Mg)-Dissolved	12.2		0.0050	mg/L	26-SEP-19	26-SEP-19	R4844376
Manganese (Mn)-Dissolved	2.29		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4847852
Molybdenum (Mo)-Dissolved	0.000839		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Nickel (Ni)-Dissolved	0.00180		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Potassium (K)-Dissolved	11.1		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Rubidium (Rb)-Dissolved	0.00048		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silicon (Si)-Dissolved	13.5		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Sodium (Na)-Dissolved	49.4		0.050	mg/L	26-SEP-19	26-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.296		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Sulfur (S)-Dissolved	1.05		0.50	mg/L	26-SEP-19	26-SEP-19	R4844376
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	26-SEP-19	R4844376
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	26-SEP-19	R4844376
Uranium (U)-Dissolved	0.000402		0.000010	mg/L	26-SEP-19	26-SEP-19	R4844376
Vanadium (V)-Dissolved	0.00179		0.00050	mg/L	26-SEP-19	26-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	26-SEP-19	R4844376

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-6 WG-56484-230919-NT-17 Sampled By: N. Turl on 23-SEP-19 @ 16:45 Matrix: GW							
Dissolved Metals							
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	26-SEP-19	R4844376
Volatile Organic Compounds							
Benzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Bromodichloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Bromoform	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Carbon Tetrachloride	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
Chlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Dibromochloromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Chloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Chloroform	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Chloromethane	<0.0050		0.0050	mg/L	01-OCT-19	04-OCT-19	R4846568
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,2-Dichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Dichloromethane	<0.0050		0.0050	mg/L	01-OCT-19	04-OCT-19	R4846568
1,2-Dichloropropane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4851265
Ethylbenzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Styrene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	01-OCT-19	04-OCT-19	R4846568
Tetrachloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Toluene	<0.00045		0.00045	mg/L	01-OCT-19	01-OCT-19	R4846568
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	01-OCT-19	04-OCT-19	R4846568
Trichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Trichlorofluoromethane	<0.0010		0.0010	mg/L	01-OCT-19	04-OCT-19	R4846568
Vinyl Chloride	<0.00040		0.00040	mg/L	01-OCT-19	04-OCT-19	R4846568
ortho-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
meta- & para-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4846568
Xylenes	<0.00075		0.00075	mg/L		01-OCT-19	
Surrogate: 4-Bromofluorobenzene (SS)	87.2		70-130	%		01-OCT-19	R4846568
Surrogate: 1,4-Difluorobenzene (SS)	101.6		70-130	%		01-OCT-19	R4846568

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353609-6 WG-56484-230919-NT-17							
Sampled By: N. Turl on 23-SEP-19 @ 16:45 Matrix: GW							
Matrix: GW Hydrocarbons							
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	01-OCT-19	02-OCT-19	D4940255
VPH (C6-C10)	<0.10		0.10	mg/L	01-001-19	02-OCT-19 02-OCT-19	K4049233
Surrogate: 3,4-Dichlorotoluene (SS)	97.8		70-130	// // // // // // // // // // // // //		02-OCT-19	R4849255
Carregate: 6,1 Bioincreteraene (CC)	07.0		70 100	70		02 001 10	114040200
* Poter to Peteranged Information for Qualifiers (if any) and							

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	trans-1,3-Dichloropropylene	LCS-ND	L2353609-5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2353609-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2353609-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2353609-1, -2, -3, -4, -5, -6
•	3		. , , , ,

Sample Parameter Qualifier key listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
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-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Cabrulation Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where negligible during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FUELS-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents, GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), p@seNetsith hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), presemed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

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Version: FINAL

Reference Information

This analysis is carried out using procedgrasindanted 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.

VH in Water by Headspace GCFID BC Env. Lab Manual (VH in Water) Water

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Compounds eluting between n-hexane and n-decane are measured and summed together using flame-ionization detection.

VH-SURR-FID-VA Water VH Surrogates for Waters BC Env. Lab Manual (VH in Solids)

VOC-HSMS-VA Water VOCs in water by Headspace FPA 5021A/8260C

The water sample, with added reagents GEMeated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC-M-HSMS-VA Miscellaneous VOCs in Water by EPA 5021A/8260C Water

Water samples, with reagents, are heat 6C4MS an aliquot of the headspace at equilibrium is analysed by GC-MS.

BTEX/MTBE/Styrene by Headspace VOC7-HSMS-VA Water EPA 5021A/8260C

The water sample, with added reagents GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for EPA 5035A/5021A/8260C

Waters

VPH-CALC-VA Water VPH is VH minus select aromatics BC MOF VPH

VPHw measures Volatile Petroleum Hydrocarbons in water. Results are calculated by subtraction of specific Monocyclic Aromatic Hydrocarbons from

VH6-10, as per the BC Lab Manual VPH calculation procedure.

VPHw = VH6-10 minus Benzene, Toluene, Ethylbenzene, Xylenes, and Styrene

XYLENES-CALC-VA Water Sum of Xylene Isomer CALCULATION

Concentrations Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The

DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** 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 ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA VA

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 SÁMPLES WERE RECEIVED IN ACCEPTABLE CONDITION

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



Workorder: L2353609 Report Date: 10-OCT-19 Page 1 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA Batch R48443	Water 92							
WG3173096-4 DU Alkalinity, Total (as C	P	L2353609-1 47.5	48.4		mg/L	1.9	20	26-SEP-19
WG3173096-3 LC3 Alkalinity, Total (as C			101.1		%		85-115	26-SEP-19
WG3173096-1 MB Alkalinity, Total (as C			<1.0		mg/L		1	26-SEP-19
CL-IC-N-VA	Water							
Batch R48477	89							
WG3173074-3 DU Chloride (CI)	P	L2353609-1 0.92	0.94		mg/L	1.5	20	25-SEP-19
WG3173074-2 LC 5 Chloride (Cl)	S		105.2		%		90-110	25-SEP-19
WG3173074-1 MB Chloride (Cl)			<0.50		mg/L		0.5	25-SEP-19
WG3173074-4 MS Chloride (CI)		L2353609-3	104.4		%		75-125	25-SEP-19
EC-PCT-VA	Water							
Batch R48443	92							
WG3173096-4 DU Conductivity	P	L2353609-1 98.2	98.7		uS/cm	0.5	10	26-SEP-19
WG3173096-3 LC3 Conductivity	S		101.6		%		90-110	26-SEP-19
WG3173096-1 MB Conductivity			<2.0		uS/cm		2	26-SEP-19
F-IC-N-VA	Water							
Batch R48477	89							
WG3173074-3 DU Fluoride (F)	P	L2353609-1 < 0.020	<0.020	RPD-NA	mg/L	N/A	20	25-SEP-19
WG3173074-2 LC 5 Fluoride (F)	S		99.97		%		90-110	25-SEP-19
WG3173074-1 MB Fluoride (F)			<0.020		mg/L		0.02	25-SEP-19
WG3173074-4 MS Fluoride (F)		L2353609-3	100.1		%		75-125	25-SEP-19
HG-D-CVAA-VA	Water							



Workorder: L2353609 Report Date: 10-OCT-19 Page 2 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4847852 WG3174217-11 DUP Mercury (Hg)-Dissolved		L2353312-2 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174217-10 LCS Mercury (Hg)-Dissolved			99.5		%		80-120	27-SEP-19
WG3174217-9 MB Mercury (Hg)-Dissolved			<0.0000050]	mg/L		0.000005	27-SEP-19
WG3174217-12 MS Mercury (Hg)-Dissolved		L2353312-1	97.9		%		70-130	27-SEP-19
MET-D-CCMS-VA	Water							
Batch R4844376								
WG3173242-3 DUP Aluminum (Al)-Dissolved	l	L2351834-1 <0.0030	<0.0030	RPD-NA	mg/L	N/A	20	26-SEP-19
Antimony (Sb)-Dissolved	l	0.00052	0.00053		mg/L	2.3	20	26-SEP-19
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Barium (Ba)-Dissolved		0.0117	0.0113		mg/L	3.3	20	26-SEP-19
Beryllium (Be)-Dissolved		<0.00010	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-SEP-19
Boron (B)-Dissolved		0.075	0.063		mg/L	16	20	26-SEP-19
Cadmium (Cd)-Dissolved	d	0.000940	0.000918		mg/L	2.4	20	26-SEP-19
Calcium (Ca)-Dissolved		347	343		mg/L	1.2	20	26-SEP-19
Cesium (Cs)-Dissolved		0.000134	0.000131		mg/L	2.0	20	26-SEP-19
Chromium (Cr)-Dissolve	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Cobalt (Co)-Dissolved		0.0350	0.0347		mg/L	0.9	20	26-SEP-19
Copper (Cu)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	26-SEP-19
Iron (Fe)-Dissolved		0.120	0.124		mg/L	3.1	20	26-SEP-19
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-SEP-19
Lithium (Li)-Dissolved		0.160	0.150		mg/L	6.4	20	26-SEP-19
Magnesium (Mg)-Dissolv	ved .	198	195		mg/L	1.8	20	26-SEP-19
Manganese (Mn)-Dissolv	/ed	0.887	0.877		mg/L	1.1	20	26-SEP-19
Molybdenum (Mo)-Disso	lved	0.00348	0.00369		mg/L	5.8	20	26-SEP-19
Nickel (Ni)-Dissolved		0.160	0.156		mg/L	2.2	20	26-SEP-19
Phosphorus (P)-Dissolve	ed	<0.10	<0.10	RPD-NA	mg/L	N/A	20	26-SEP-19
Potassium (K)-Dissolved		6.86	6.79		mg/L	1.1	20	26-SEP-19
Rubidium (Rb)-Dissolved	i	0.00848	0.00807		mg/L	4.9	20	26-SEP-19
Selenium (Se)-Dissolved	l	0.00524	0.00501		mg/L	4.6	20	26-SEP-19



Workorder: L2353609 Report Date: 10-OCT-19 Page 3 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4844376								
WG3173242-3 DUP Silicon (Si)-Dissolved		L2351834-1 2.94	2.90		mg/L	1.3	20	26-SEP-19
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-SEP-19
Sodium (Na)-Dissolved		17.2	17.1		mg/L	0.8	20	26-SEP-19
Strontium (Sr)-Dissolved	d	0.641	0.661		mg/L	2.9	20	26-SEP-19
Sulfur (S)-Dissolved		377	378		mg/L	0.4	20	26-SEP-19
Tellurium (Te)-Dissolved	d	<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	26-SEP-19
Thallium (TI)-Dissolved		0.000122	0.000122		mg/L	0.1	20	26-SEP-19
Thorium (Th)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-SEP-19
Tungsten (W)-Dissolved	I	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-SEP-19
Uranium (U)-Dissolved		0.0200	0.0204		mg/L	1.7	20	26-SEP-19
Vanadium (V)-Dissolved	I	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-SEP-19
Zinc (Zn)-Dissolved		0.0559	0.0553		mg/L	1.0	20	26-SEP-19
Zirconium (Zr)-Dissolved	b	<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	26-SEP-19
WG3173242-2 LCS								
Aluminum (Al)-Dissolved	t		101.4		%		80-120	26-SEP-19
Antimony (Sb)-Dissolved	b		100.9		%		80-120	26-SEP-19
Arsenic (As)-Dissolved			97.9		%		80-120	26-SEP-19
Barium (Ba)-Dissolved			95.2		%		80-120	26-SEP-19
Beryllium (Be)-Dissolved	t		95.2		%		80-120	26-SEP-19
Bismuth (Bi)-Dissolved			96.0		%		80-120	26-SEP-19
Boron (B)-Dissolved			84.8		%		80-120	26-SEP-19
Cadmium (Cd)-Dissolve			95.4		%		80-120	26-SEP-19
Calcium (Ca)-Dissolved			92.5		%		80-120	26-SEP-19
Cesium (Cs)-Dissolved			98.0		%		80-120	26-SEP-19
Chromium (Cr)-Dissolve	ed		102.4		%		80-120	26-SEP-19
Cobalt (Co)-Dissolved			97.5		%		80-120	26-SEP-19
Copper (Cu)-Dissolved			95.2		%		80-120	26-SEP-19
Iron (Fe)-Dissolved			98.1		%		80-120	26-SEP-19
Lead (Pb)-Dissolved			97.5		%		80-120	26-SEP-19
Lithium (Li)-Dissolved			94.8		%		80-120	26-SEP-19
Magnesium (Mg)-Dissol	ved		98.2		%		80-120	26-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R484437	76							
WG3173242-2 LCS			00.0		0/			
Manganese (Mn)-Diss			99.8		%		80-120	26-SEP-19
Molybdenum (Mo)-Dis	ssolved		103.1		%		80-120	26-SEP-19
Nickel (Ni)-Dissolved			100.1		%		80-120	26-SEP-19
Phosphorus (P)-Disso			111.1		%		70-130	26-SEP-19
Potassium (K)-Dissolv			95.8		%		80-120	26-SEP-19
Rubidium (Rb)-Dissol			97.2		%		80-120	26-SEP-19
Selenium (Se)-Dissol			100.6		%		80-120	26-SEP-19
Silicon (Si)-Dissolved			98.9		%		60-140	26-SEP-19
Silver (Ag)-Dissolved			103.3		%		80-120	26-SEP-19
Sodium (Na)-Dissolve	ed		98.1		%		80-120	26-SEP-19
Strontium (Sr)-Dissolv	ved		97.4		%		80-120	26-SEP-19
Sulfur (S)-Dissolved			91.9		%		80-120	26-SEP-19
Tellurium (Te)-Dissolv	ved		112.2		%		80-120	26-SEP-19
Thallium (TI)-Dissolve	ed		98.5		%		80-120	26-SEP-19
Thorium (Th)-Dissolve	ed		91.4		%		80-120	26-SEP-19
Tin (Sn)-Dissolved			94.9		%		80-120	26-SEP-19
Titanium (Ti)-Dissolve	ed		96.1		%		80-120	26-SEP-19
Tungsten (W)-Dissolv	ved .		100.5		%		80-120	26-SEP-19
Uranium (U)-Dissolve	d		97.0		%		80-120	26-SEP-19
Vanadium (V)-Dissolv	ved .		101.0		%		80-120	26-SEP-19
Zinc (Zn)-Dissolved			96.8		%		80-120	26-SEP-19
Zirconium (Zr)-Dissolv	ved		101.5		%		80-120	26-SEP-19
WG3173242-1 MB								
Aluminum (Al)-Dissolv	ved		<0.0010		mg/L		0.001	26-SEP-19
Antimony (Sb)-Dissolv	ved		<0.00010		mg/L		0.0001	26-SEP-19
Arsenic (As)-Dissolve	d		<0.00010		mg/L		0.0001	26-SEP-19
Barium (Ba)-Dissolve	d		<0.00010		mg/L		0.0001	26-SEP-19
Beryllium (Be)-Dissolv	/ed		<0.00010		mg/L		0.0001	26-SEP-19
Bismuth (Bi)-Dissolve	d		<0.00005	0	mg/L		0.00005	26-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-SEP-19
Cadmium (Cd)-Dissol	ved		<0.00000	5C	mg/L		0.000005	26-SEP-19
Calcium (Ca)-Dissolve	ed		<0.050		mg/L		0.05	26-SEP-19
Cesium (Cs)-Dissolve	ed		<0.00001	0	mg/L		0.00001	26-SEP-19
Chromium (Cr)-Disso	lved		<0.00010		mg/L		0.0001	26-SEP-19



Workorder: L2353609 Report Date: 10-OCT-19 Page 5 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R48443	76							
WG3173242-1 MB Cobalt (Co)-Dissolve			<0.00010		mg/L		0.0001	00.050.40
Copper (Cu)-Dissolve			<0.00010		mg/L		0.0001	26-SEP-19 26-SEP-19
Iron (Fe)-Dissolved	eu		<0.00020		mg/L		0.0002	26-SEP-19 26-SEP-19
Lead (Pb)-Dissolved			<0.0005	n	mg/L		0.00005	26-SEP-19 26-SEP-19
Lithium (Li)-Dissolved			<0.0010	U	mg/L		0.000	
Magnesium (Mg)-Dis			<0.0010		mg/L		0.001	26-SEP-19
Manganese (Mn)-Dis			<0.0030		mg/L		0.0001	26-SEP-19
Molybdenum (Mo)-Di			<0.00010	n	mg/L		0.0001	26-SEP-19
Nickel (Ni)-Dissolved			<0.00050	U	mg/L		0.0005	26-SEP-19
Phosphorus (P)-Diss			<0.050		mg/L		0.0005	26-SEP-19
Potassium (K)-Disso			<0.050		mg/L		0.05	26-SEP-19
Rubidium (Rb)-Disso			<0.00020		mg/L		0.0002	26-SEP-19 26-SEP-19
Selenium (Se)-Disso			<0.00020	n	mg/L		0.0002	26-SEP-19 26-SEP-19
Silicon (Si)-Dissolved			<0.050	U	mg/L		0.05	26-SEP-19 26-SEP-19
Silver (Ag)-Dissolved			<0.0001	n	mg/L		0.00001	
Sodium (Na)-Dissolved			<0.050	U	mg/L		0.05	26-SEP-19
Strontium (Sr)-Disso			<0.00020		mg/L		0.0002	26-SEP-19
Sulfur (S)-Dissolved	ived		<0.50		mg/L		0.5	26-SEP-19
Tellurium (Te)-Disso	lved		<0.00020		mg/L		0.0002	26-SEP-19
Thallium (TI)-Dissolv			<0.00020		mg/L		0.0002	26-SEP-19
Thorium (Th)-Dissolv			<0.00010	U	mg/L		0.0001	26-SEP-19
Tin (Sn)-Dissolved	7eu		<0.00010		mg/L		0.0001	26-SEP-19 26-SEP-19
Titanium (Ti)-Dissolv	red		<0.00010		mg/L		0.0003	
Tungsten (W)-Dissol			<0.00030		mg/L		0.0003	26-SEP-19 26-SEP-19
Uranium (U)-Dissolv			<0.00010		mg/L		0.0001	
Vanadium (V)-Dissol			<0.00050	J	mg/L		0.0005	26-SEP-19
Zinc (Zn)-Dissolved	vou		<0.00030		mg/L		0.0003	26-SEP-19
Ziric (Ziri)-Dissolved Zirconium (Zr)-Disso	lved		<0.0010		mg/L		0.001	26-SEP-19
WG3173242-4 MS		1 2252500 4	<u> </u>		mg/L		0.0002	26-SEP-19
Aluminum (Al)-Disso		L2353609-1	99.4		%		70-130	26-SEP-19
Antimony (Sb)-Disso	lved		101.4		%		70-130	26-SEP-19
Arsenic (As)-Dissolv	ed		98.9		%		70-130	26-SEP-19
Barium (Ba)-Dissolve	ed		93.8		%		70-130	26-SEP-19
Beryllium (Be)-Disso	lved		96.2		%		70-130	26-SEP-19



Workorder: L2353609 Report Date: 10-OCT-19 Page 6 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test Matr	ix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water	er						
Batch R4844376							
WG3173242-4 MS	L2353609-1	00.7		0/			
Bismuth (Bi)-Dissolved		90.7		%		70-130	26-SEP-19
Boron (B)-Dissolved		89.4		%		70-130	26-SEP-19
Cadmium (Cd)-Dissolved		99.8		%		70-130	26-SEP-19
Calcium (Ca)-Dissolved		N/A	MS-B	%		-	26-SEP-19
Cesium (Cs)-Dissolved		96.4		%		70-130	26-SEP-19
Chromium (Cr)-Dissolved		100.1		%		70-130	26-SEP-19
Cobalt (Co)-Dissolved		97.2		%		70-130	26-SEP-19
Copper (Cu)-Dissolved		96.0		%		70-130	26-SEP-19
Iron (Fe)-Dissolved		95.5		%		70-130	26-SEP-19
Lead (Pb)-Dissolved		96.2		%		70-130	26-SEP-19
Lithium (Li)-Dissolved		97.2		%		70-130	26-SEP-19
Magnesium (Mg)-Dissolved		N/A	MS-B	%		-	26-SEP-19
Manganese (Mn)-Dissolved		101.3		%		70-130	26-SEP-19
Molybdenum (Mo)-Dissolved		99.8		%		70-130	26-SEP-19
Nickel (Ni)-Dissolved		98.1		%		70-130	26-SEP-19
Phosphorus (P)-Dissolved		100.9		%		70-130	26-SEP-19
Potassium (K)-Dissolved		103.8		%		70-130	26-SEP-19
Rubidium (Rb)-Dissolved		98.9		%		70-130	26-SEP-19
Selenium (Se)-Dissolved		98.4		%		70-130	26-SEP-19
Silicon (Si)-Dissolved		92.0		%		70-130	26-SEP-19
Silver (Ag)-Dissolved		104.3		%		70-130	26-SEP-19
Sodium (Na)-Dissolved		95.8		%		70-130	26-SEP-19
Strontium (Sr)-Dissolved		N/A	MS-B	%		-	26-SEP-19
Sulfur (S)-Dissolved		99.1		%		70-130	26-SEP-19
Tellurium (Te)-Dissolved		109.7		%		70-130	26-SEP-19
Thallium (TI)-Dissolved		94.8		%		70-130	26-SEP-19
Thorium (Th)-Dissolved		100.9		%		70-130	26-SEP-19
Tin (Sn)-Dissolved		97.0		%		70-130	26-SEP-19
Titanium (Ti)-Dissolved		100.3		%		70-130	26-SEP-19
Tungsten (W)-Dissolved		100.2		%		70-130	26-SEP-19
Uranium (U)-Dissolved		93.1		%		70-130	26-SEP-19
Vanadium (V)-Dissolved		98.7		%		70-130	26-SEP-19
Zinc (Zn)-Dissolved		98.9		%		70-130	26-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Batch R4844376 WG3173242-4 MS Zirconium (Zr)-Dissolve	Water	L2353609-1	105.5		%		70-130	26-SEP-19
NH3-F-VA	Water							
Batch R4849527 WG3174066-3 DUP Ammonia, Total (as N)		L2353609-1 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174066-2 LCS Ammonia, Total (as N)			103.4		%		85-115	27-SEP-19
WG3174066-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	27-SEP-19
WG3174066-4 MS Ammonia, Total (as N)		L2353609-2	89.9		%		75-125	27-SEP-19
NO2-L-IC-N-VA	Water							
Batch R4847789								
WG3173074-3 DUP Nitrite (as N)		L2353609-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-SEP-19
WG3173074-2 LCS Nitrite (as N)			100.7		%		90-110	25-SEP-19
WG3173074-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	25-SEP-19
WG3173074-4 MS Nitrite (as N)		L2353609-3	99.1		%		75-125	25-SEP-19
NO3-L-IC-N-VA	Water							
Batch R4847789								
WG3173074-3 DUP Nitrate (as N)		L2353609-1 0.0627	0.0627		mg/L	0.1	20	25-SEP-19
WG3173074-2 LCS Nitrate (as N)			106.8		%		90-110	25-SEP-19
WG3173074-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	25-SEP-19
WG3173074-4 MS Nitrate (as N)		L2353609-3	103.7		%		75-125	25-SEP-19
PH-PCT-VA	Water							



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-PCT-VA	Water		_					
Batch R4844392 WG3173096-2 CRM pH		VA-PH7-BUF	7.02		рН		6.9-7.1	26-SEP-19
WG3173096-4 DUP pH		L2353609-1 7.77	7.80	J	рН	0.03	0.3	26-SEP-19
SO4-IC-N-VA	Water							
Batch R4847789 WG3173074-3 DUP Sulfate (SO4)		L2353609-1 2.42	2.41		mg/L	0.2	20	25-SEP-19
WG3173074-2 LCS Sulfate (SO4)			106.1		%		90-110	25-SEP-19
WG3173074-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	25-SEP-19
WG3173074-4 MS Sulfate (SO4)		L2353609-3	104.5		%		75-125	25-SEP-19
TDS-VA	Water							
Batch R4851422 WG3176211-3 DUP Total Dissolved Solids		L2352402-4 524	538		mg/L	2.7	20	30-SEP-19
WG3176211-6 DUP Total Dissolved Solids		L2353609-4 115	109		mg/L	5.7	20	30-SEP-19
WG3176211-2 LCS Total Dissolved Solids			101.3		%		85-115	30-SEP-19
WG3176211-5 LCS Total Dissolved Solids			101.6		%		85-115	30-SEP-19
WG3176211-1 MB Total Dissolved Solids			<10		mg/L		10	30-SEP-19
WG3176211-4 MB Total Dissolved Solids			<10		mg/L		10	30-SEP-19
VH-HSFID-VA	Water							
Batch R4849255 WG3177589-2 LCS Volatile Hydrocarbons (VH6-10)		109.3		%		70-130	02-OCT-19
WG3177589-1 MB Volatile Hydrocarbons (<0.10		mg/L		0.1	02-OCT-19
VOC-HSMS-VA	Water							



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Client: GHD Limited

400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4846568								
WG3177589-2 LCS Bromodichloromethane			107.4		0/		70.400	04 007 40
Bromodichioromethane			107.4 121.3		% %		70-130	01-OCT-19
Carbon Tetrachloride							70-130	01-OCT-19
Chlorobenzene			130.0 107.1		%		70-130	01-OCT-19
Dibromochloromethane			-		%		70-130	01-OCT-19
	•		114.0				70-130	01-OCT-19
Chloroethane			109.1		%		60-140	01-OCT-19
Chloroform			111.5		%		70-130	01-OCT-19
Chloromethane			132.5		%		60-140	01-OCT-19
1,2-Dichlorobenzene			104.7		%		70-130	01-OCT-19
1,3-Dichlorobenzene			94.9		%		70-130	01-OCT-19
1,4-Dichlorobenzene			103.4		%		70-130	01-OCT-19
1,1-Dichloroethane			112.3		%		70-130	01-OCT-19
1,2-Dichloroethane			107.8		%		70-130	01-OCT-19
1,1-Dichloroethylene			117.1		%		70-130	01-OCT-19
cis-1,2-Dichloroethylene			109.6		%		70-130	01-OCT-19
trans-1,2-Dichloroethyle	ene		113.3		%		70-130	01-OCT-19
Dichloromethane			110.0		%		60-140	01-OCT-19
1,2-Dichloropropane			111.3		%		70-130	01-OCT-19
cis-1,3-Dichloropropyle	ne		81.2		%		70-130	01-OCT-19
trans-1,3-Dichloropropy	rlene		68.6	LCS-ND	%		70-130	01-OCT-19
1,1,1,2-Tetrachloroetha	ne		106.8		%		70-130	01-OCT-19
1,1,2,2-Tetrachloroetha	ne		101.5		%		70-130	01-OCT-19
Tetrachloroethylene			122.9		%		70-130	01-OCT-19
1,1,1-Trichloroethane			111.2		%		70-130	01-OCT-19
1,1,2-Trichloroethane			98.1		%		70-130	01-OCT-19
Trichloroethylene			113.9		%		70-130	01-OCT-19
Trichlorofluoromethane			133.3		%		60-140	01-OCT-19
Vinyl Chloride			122.7		%		60-140	01-OCT-19
WG3177589-1 MB			-0.0040		ma/l		0.004	04 OOT ::
Bromodichloromethane			<0.0010		mg/L		0.001	01-OCT-19
Bromoform			<0.0010		mg/L		0.001	01-OCT-19
Carbon Tetrachloride			<0.00050		mg/L		0.0005	01-OCT-19
Chlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
Dibromochloromethane			<0.0010		mg/L		0.001	01-OCT-19



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R4846	568							
WG3177589-1 M Chloroethane	В		0.0040		~ /l		0.004	
			<0.0010		mg/L		0.001	01-OCT-19
Chloroform Chloromethane			<0.0010		mg/L		0.001	01-OCT-19
	-		<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichlorobenzer			<0.00050		mg/L		0.0005	01-OCT-19
1,3-Dichlorobenzer			<0.0010		mg/L		0.001	01-OCT-19
1,4-Dichlorobenzer			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethylen			<0.0010		mg/L		0.001	01-OCT-19
cis-1,2-Dichloroethy			<0.0010		mg/L		0.001	01-OCT-19
trans-1,2-Dichloroe	thylene		<0.0010		mg/L		0.001	01-OCT-19
Dichloromethane			<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichloropropan			<0.0010		mg/L		0.001	01-OCT-19
cis-1,3-Dichloropro	-		<0.00050		mg/L		0.0005	01-OCT-19
trans-1,3-Dichlorop	.,		<0.00050		mg/L		0.0005	01-OCT-19
1,1,1,2-Tetrachloro			<0.0010		mg/L		0.001	01-OCT-19
1,1,2,2-Tetrachloro			<0.00020		mg/L		0.0002	01-OCT-19
Tetrachloroethylene			<0.0010		mg/L		0.001	01-OCT-19
1,1,1-Trichloroetha	ne		<0.0010		mg/L		0.001	01-OCT-19
1,1,2-Trichloroetha	ne		<0.00050		mg/L		0.0005	01-OCT-19
Trichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
Trichlorofluorometh	nane		<0.0010		mg/L		0.001	01-OCT-19
Vinyl Chloride			<0.00040		mg/L		0.0004	01-OCT-19
VOC7-HSMS-VA	Water							
Batch R4846	568							
	cs							
Benzene			109.5		%		70-130	01-OCT-19
Ethylbenzene	(14755)		98.9		%		70-130	01-OCT-19
Methyl t-butyl ether	(MTBE)		102.2		%		70-130	01-OCT-19
Styrene			93.1		%		70-130	01-OCT-19
Toluene			99.9		%		70-130	01-OCT-19
meta- & para-Xylen	ie		104.6		%		70-130	01-OCT-19
ortho-Xylene			99.7		%		70-130	01-OCT-19
WG3177589-1 M	В							



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Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
Batch R4846568 WG3177589-1 MB								
Benzene			< 0.00050		mg/L		0.0005	01-OCT-19
Ethylbenzene			<0.00050		mg/L		0.0005	01-OCT-19
Methyl t-butyl ether (MTE	BE)		<0.00050		mg/L		0.0005	01-OCT-19
Styrene			< 0.00050		mg/L		0.0005	01-OCT-19
Toluene			<0.00045		mg/L		0.00045	01-OCT-19
meta- & para-Xylene			<0.00050		mg/L		0.0005	01-OCT-19
ortho-Xylene			<0.00050		mg/L		0.0005	01-OCT-19

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Contact: Airesse MacPhee

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.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
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.

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Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	23-SEP-19 13:15	26-SEP-19 11:23	0.25	70	hours	EHTR-FM
	2	23-SEP-19 13:40	26-SEP-19 11:23	0.25	70	hours	EHTR-FM
	3	23-SEP-19 14:20	26-SEP-19 11:23	0.25	69	hours	EHTR-FN
	4	23-SEP-19 16:00	26-SEP-19 11:23	0.25	67	hours	EHTR-FN
	5	23-SEP-19 16:40	26-SEP-19 11:23	0.25	67	hours	EHTR-FN
	6	23-SEP-19 16:45	26-SEP-19 11:23	0.25	67	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2353609 were received on 25-SEP-19 08:45.

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 predetermined 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.

Environmental

Chain of Custody (COC) / Analytical Request Form

L2353609-COFC COC Number: 17 -

(ALS)	environmental www.alsglobal.com	. Canada Tol	l Free: 1 800 6	68 9878 (L2000009 - (JOI-	C			,			-		ŀ						
Report To	Contact and company name below will app	ear on the final report		Report Format	/ Distribution		ı					- Con	act yo	ur AM t	o confi	inn all	E&P T/	ATs (su	rcharges	may	apply)	,
Company:	GHD Limited	•	Select Report F	Select Report Format: PDF DEXCEL DEDD (DIGITAL)			Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact:	Airesse MacPhee		1	Quality Control (QC) Report with Report 🗹 YES 🗌 NO			🖁 4 day [P4-20%] 🗆 🐧 1 Business day [E1 - 100%]															
Phone:	604 248 3661	,	☐Compare Result	s to Criteria on Report -	provide details below	v if box checked	ORIT	3 day	/ [P3-2	5%]		RGE	San	e Dav	, Weel	kend o	r Stat	utory i	ıolidav	(E2 -2	.00%	_
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Street:	455 Phillip Street		Email 1 or Fax	airesse macphee(@ghd.com	-		Date and	d Time F	Require	d for al	E&P TA	Ts:				dd-mn	nm-yy	hb:mm			
City/Province:	Waterloo, ON		Email 2	Laurie.Clark@gho	l.com, Natasha.	Furl@ghd.com	For te:	sts that c	an not be	perform	ned acc	rding to t	he servi	e level s	elected.	you will	be conta	cted.				
Postal Code:	N2L 3X2		Email 3	Michaela.Dyck@g	hd.com,Lainey.i	Kong@ghd.com							Ar	alysis	Requ	est						
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ALS Lab Wor	k Order# (lab use only):		ALS Contact:	Selam W.	Sampler:	itur	y (Speci	(C), F, S				Dissolved Metals	/OC / VPH / VH							ES ON	is haza	lょl
ALS Sample # (lab use only)	Sample Identification (This description will a			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Alkalinit	Anions	돐	ပ္မ	EH.	UDS Dissolw	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \							SAMPLE	Sample	NUMBER (
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	SHIPMENT RELEASE (client use) .		INITIAL SHIPMEN	T RECEPTION (lab use only)						FINA	L SHI	PMEN	REC	EPTIO	N (lab	use o	nly)			
Released by:	M. Zul Sept. 23	19 1700	Received by:		Date:		Time		Recei	•	م : ا	Ka		Date 2	5	0	2 19	-3		Time S-1	45	
REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLING	G INFORMATION *		WH	ITE - LABORATO	RY COPY YEL	LOW -	- CLIEN	T COPY	(-,		· . •				~ 1		/			SEPT 20	KT FRONT



GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 25-SEP-19

Report Date: 02-OCT-19 19:27 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2353611Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River SW

Comments:

Selam Worku Account Manager

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L2353611 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-1 WS-56484-230919-NT-01 Sampled By: CLIENT on 23-SEP-19 @ 12:20 Matrix: SW							
Physical Tests							
Conductivity	77.8		2.0	uS/cm		26-SEP-19	R4848330
Hardness (as CaCO3)	28.3		0.50	mg/L		27-SEP-19	
Hardness (from Totals)	28.8		0.50	mg/L		02-OCT-19	
рН	7.06		0.10	рН		26-SEP-19	R4848330
Total Dissolved Solids	77		13	mg/L		30-SEP-19	R4851422
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	29.4		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Total (as CaCO3)	29.4		1.0	mg/L		26-SEP-19	R4848330
Ammonia, Total (as N)	0.0069		0.0050	mg/L		27-SEP-19	R4849527
Chloride (CI)	3.93		0.50	mg/L		26-SEP-19	R4847748
Fluoride (F)	<0.020		0.020	mg/L		26-SEP-19	R4847748
Nitrate and Nitrite (as N)	0.0108		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	0.0108		0.0050	mg/L		26-SEP-19	R4847748
Nitrite (as N)	<0.0010		0.0010	mg/L		26-SEP-19	R4847748
Sulfate (SO4)	5.77		0.30	mg/L		26-SEP-19	R4847748
Total Metals							
Aluminum (Al)-Total	0.122		0.0030	mg/L		27-SEP-19	R4844376
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4844376
Arsenic (As)-Total	0.00034		0.00010	mg/L		27-SEP-19	R4844376
Barium (Ba)-Total	0.00430		0.00010	mg/L		27-SEP-19	R4844376
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4844376
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4844376
Boron (B)-Total	<0.010		0.010	mg/L		27-SEP-19	R4844376
Cadmium (Cd)-Total	0.0000139		0.0000050	mg/L		27-SEP-19	R4844376
Calcium (Ca)-Total	6.57		0.050	mg/L		27-SEP-19	R4844376
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4844376
Chromium (Cr)-Total	0.00044		0.00010	mg/L		27-SEP-19	R4844376
Cobalt (Co)-Total	0.00027		0.00010	mg/L		27-SEP-19	R4844376
Copper (Cu)-Total	0.00069		0.00050	mg/L		27-SEP-19	R4844376
Iron (Fe)-Total	0.343		0.010	mg/L		27-SEP-19	R4844376
Lead (Pb)-Total	0.000083		0.000050	mg/L		27-SEP-19	R4844376
Lithium (Li)-Total	<0.0010		0.0010	mg/L		27-SEP-19	R4844376
Magnesium (Mg)-Total	3.01		0.0050	mg/L		27-SEP-19	R4844376
Manganese (Mn)-Total	0.0891		0.00010	mg/L		27-SEP-19	R4844376
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		27-SEP-19	R4847972
Molybdenum (Mo)-Total	0.000062		0.000050	mg/L		27-SEP-19	R4844376
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		27-SEP-19	R4844376
Phosphorus (P)-Total	<0.050		0.050	mg/L		27-SEP-19	R4844376
Potassium (K)-Total	0.616		0.050	mg/L		27-SEP-19	R4844376

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

L2353611 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-1 WS-56484-230919-NT-01 Sampled By: CLIENT on 23-SEP-19 @ 12:20 Matrix: SW							
Total Metals							
Rubidium (Rb)-Total	0.00059		0.00020	mg/L		27-SEP-19	R4844376
Selenium (Se)-Total	0.000096		0.000050	mg/L		27-SEP-19	R4844376
Silicon (Si)-Total	6.53		0.10	mg/L		27-SEP-19	R4844376
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4844376
Sodium (Na)-Total	3.98		0.050	mg/L		27-SEP-19	R4844376
Strontium (Sr)-Total	0.0256		0.00020	mg/L		27-SEP-19	R4844376
Sulfur (S)-Total	1.95		0.50	mg/L		27-SEP-19	R4844376
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		27-SEP-19	R4844376
Thallium (TI)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4844376
Thorium (Th)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4844376
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4844376
Titanium (Ti)-Total	0.00806		0.00030	mg/L		27-SEP-19	R4844376
Tungsten (W)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4844376
Uranium (U)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4844376
Vanadium (V)-Total	0.00289		0.00050	mg/L		27-SEP-19	R4844376
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-SEP-19	R4844376
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		27-SEP-19	R4844376
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4845309
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4844991
Aluminum (Al)-Dissolved	0.0789		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Arsenic (As)-Dissolved	0.00027		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Barium (Ba)-Dissolved	0.00389		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4843890
Cadmium (Cd)-Dissolved	0.0000104		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Calcium (Ca)-Dissolved	6.33		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Chromium (Cr)-Dissolved	0.00034		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Cobalt (Co)-Dissolved	0.00024		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Copper (Cu)-Dissolved	0.00053		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Iron (Fe)-Dissolved	0.255		0.010	mg/L	26-SEP-19	27-SEP-19	R4843890
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Magnesium (Mg)-Dissolved	3.04		0.0050	mg/L	26-SEP-19	27-SEP-19	R4843890
Manganese (Mn)-Dissolved	0.0687		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4842828
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4843890

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-1 WS-56484-230919-NT-01 Sampled By: CLIENT on 23-SEP-19 @ 12:20 Matrix: SW							
Dissolved Metals							
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Potassium (K)-Dissolved	0.736		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Rubidium (Rb)-Dissolved	0.00057		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Selenium (Se)-Dissolved	0.000103		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Silicon (Si)-Dissolved	6.91		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Sodium (Na)-Dissolved	4.27		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Strontium (Sr)-Dissolved	0.0233		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Sulfur (S)-Dissolved	2.04		0.50	mg/L	26-SEP-19	27-SEP-19	R4843890
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Titanium (Ti)-Dissolved	0.00319		0.00030	mg/L	26-SEP-19	27-SEP-19	R4843890
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Vanadium (V)-Dissolved	0.00231		0.00050	mg/L	26-SEP-19	27-SEP-19	R4843890
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
L2353611-2 WS-56484-230919-NT-02 Sampled By: CLIENT on 23-SEP-19 @ 12:30 Matrix: SW							
Physical Tests							
Conductivity	30.3		2.0	uS/cm		25-SEP-19	R4843734
Hardness (as CaCO3)	8.02		0.50	mg/L		27-SEP-19	
Hardness (from Totals)	8.15		0.50	mg/L		02-OCT-19	
pH	6.88		0.10	pН		25-SEP-19	R4843734
Total Dissolved Solids	33		10	mg/L		30-SEP-19	R4851422
Anions and Nutrients				-			
Alkalinity, Bicarbonate (as CaCO3)	7.5		1.0	mg/L		25-SEP-19	R4843734
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4843734
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4843734
Alkalinity, Total (as CaCO3)	7.5		1.0	mg/L		25-SEP-19	R4843734
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		26-SEP-19	R4842769
Chloride (CI)	3.71		0.50	mg/L		25-SEP-19	R4841214
Fluoride (F)	<0.020		0.020	mg/L		25-SEP-19	R4841214
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		27-SEP-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4841214
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4841214
Sulfate (SO4)	1.08		0.30	mg/L		25-SEP-19	R4841214
Total Metals							
Aluminum (AI)-Total	0.0222		0.0030	mg/L		26-SEP-19	R4844376

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-2 WS-56484-230919-NT-02 Sampled By: CLIENT on 23-SEP-19 @ 12:30 Matrix: SW							
Total Metals							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Arsenic (As)-Total	0.00014		0.00010	mg/L			R4844376
Barium (Ba)-Total	0.00116		0.00010	mg/L		26-SEP-19	R4844376
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4844376
Boron (B)-Total	<0.010		0.010	mg/L		26-SEP-19	R4844376
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		26-SEP-19	R4844376
Calcium (Ca)-Total	1.83		0.050	mg/L		26-SEP-19	R4844376
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		26-SEP-19	R4844376
Chromium (Cr)-Total	0.00011		0.00010	mg/L		26-SEP-19	R4844376
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Copper (Cu)-Total	<0.00050		0.00050	mg/L		26-SEP-19	R4844376
Iron (Fe)-Total	0.035		0.010	mg/L		26-SEP-19	R4844376
Lead (Pb)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4844376
Lithium (Li)-Total	<0.0010		0.0010	mg/L		26-SEP-19	R4844376
Magnesium (Mg)-Total	0.873		0.0050	mg/L		26-SEP-19	R4844376
Manganese (Mn)-Total	0.00742		0.00010	mg/L		26-SEP-19	R4844376
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		27-SEP-19	R4847972
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4844376
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		26-SEP-19	R4844376
Phosphorus (P)-Total	<0.050		0.050	mg/L		26-SEP-19	R4844376
Potassium (K)-Total	0.073		0.050	mg/L		26-SEP-19	R4844376
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L		26-SEP-19	R4844376
Selenium (Se)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4844376
Silicon (Si)-Total	1.67		0.10	mg/L		26-SEP-19	R4844376
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-SEP-19	R4844376
Sodium (Na)-Total	2.65		0.050	mg/L		26-SEP-19	R4844376
Strontium (Sr)-Total	0.00933		0.00020	mg/L		26-SEP-19	R4844376
Sulfur (S)-Total	<0.50		0.50	mg/L		26-SEP-19	R4844376
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		26-SEP-19	R4844376
Thallium (TI)-Total	<0.000010		0.000010	mg/L		26-SEP-19	R4844376
Thorium (Th)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Titanium (Ti)-Total	0.00030		0.00030	mg/L		26-SEP-19	R4844376
Tungsten (W)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4844376
Uranium (U)-Total	<0.000010		0.000010	mg/L		26-SEP-19	R4844376
Vanadium (V)-Total	<0.00050		0.00050	mg/L		26-SEP-19	R4844376
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		26-SEP-19	R4844376
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		26-SEP-19	R4844376
Dissolved Metals	F.E. 5					00.055.46	D 40 45000
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4845309

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-2 WS-56484-230919-NT-02							
Sampled By: CLIENT on 23-SEP-19 @ 12:30							
Matrix: SW							
Dissolved Metals						00.050.40	D 40 4 400 4
Dissolved Metals Filtration Location	FIELD		0.0040	/1	00 CED 40	26-SEP-19	R4844991
Aluminum (Al)-Dissolved	0.0176		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Antimony (Sb)-Dissolved	<0.00015		0.00010	mg/L	26-SEP-19		R4843890
Arsenic (As)-Dissolved Barium (Ba)-Dissolved	0.00015		0.00010	mg/L	26-SEP-19 26-SEP-19	27-SEP-19 27-SEP-19	R4843890 R4843890
Beryllium (Be)-Dissolved	0.00112 <0.00010		0.00010 0.00010	mg/L	26-SEP-19		R4843890
Bismuth (Bi)-Dissolved	<0.00010		0.00010	mg/L mg/L	26-SEP-19		R4843890
Boron (B)-Dissolved	<0.010		0.000030	mg/L	26-SEP-19	27-SEP-19	R4843890
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19		R4843890
Calcium (Ca)-Dissolved	1.76		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Chromium (Cr)-Dissolved	0.00010		0.00010	mg/L	26-SEP-19		R4843890
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Copper (Cu)-Dissolved	0.00022		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Iron (Fe)-Dissolved	0.026		0.010	mg/L	26-SEP-19		R4843890
Lead (Pb)-Dissolved	<0.00050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Magnesium (Mg)-Dissolved	0.884		0.0050	mg/L	26-SEP-19		R4843890
Manganese (Mn)-Dissolved	0.00555		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	26-SEP-19	R4842828
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4843890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Potassium (K)-Dissolved	0.136		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Rubidium (Rb)-Dissolved	0.00022		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4843890
Silicon (Si)-Dissolved	1.66		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Sodium (Na)-Dissolved	2.78		0.050	mg/L	26-SEP-19	27-SEP-19	R4843890
Strontium (Sr)-Dissolved	0.00832		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	26-SEP-19	27-SEP-19	R4843890
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	27-SEP-19	R4843890
Tungsten (W)-Dissolved	0.00042	DTMF	0.00010	mg/L	26-SEP-19	27-SEP-19	R4843890
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4843890
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4843890
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4843890
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4843890
* Refer to Referenced Information for Qualifiers (if any) and	l Mathadalaan						

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

L2353611 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2353611-2 WS-56484-230919-NT-02 Sampled By: CLIENT on 23-SEP-19 @ 12:30 Matrix: SW							
Dissolved Metals							
* Refer to Referenced Information for Qualifiers (if any) and	l Mathadalagu			<u> </u>			

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

L2353611 CONTD....

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Ammonia, Total (as N)	В	L2353611-2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2353611-1, -2
Matrix Spike	Barium (Ba)-Total	MS-B	L2353611-2
Matrix Spike	Calcium (Ca)-Total	MS-B	L2353611-2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2353611-2
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L2353611-2
Matrix Spike	Potassium (K)-Total	MS-B	L2353611-2
Matrix Spike	Silicon (Si)-Total	MS-B	L2353611-2
Matrix Spike	Sodium (Na)-Total	MS-B	L2353611-2
Matrix Spike	Strontium (Sr)-Total	MS-B	L2353611-2
Matrix Spike	Sulfur (S)-Total	MS-B	L2353611-2
Matrix Spike	Uranium (U)-Total	MS-B	L2353611-2

Sample Parameter Qualifier key listed:

Qualifier	Description
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
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-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity	

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbin Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

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EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity wherentally during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

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

Water samples undergo a cold-oxidation បន្លាំ Month of the monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), proceed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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Reference Information

MET-T-CCMS-VA Water Total Metals in Water by CRC EPA 200.2/6020A (mod)

Water samples are digested with nitric along Marochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

electione

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires and procedires and procedires and procedires and procedires and procedires and procedires and procedires are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

VIC100-T-HARDNESS-VA Water Hardness from Total Metals APHA 2340B

Custom Calculation for Hardness. Client is requesting when Total Metals are run, only Total metals are used for hardness calculation.

** 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

 VA
 ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2353611 Report Date: 02-OCT-19 Page 1 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R4 WG3172940-4 Alkalinity, Total	843734 DUP (as CaCO3)	L2353758-3 22.9	22.9		mg/L	0.0	20	25-SEP-19
WG3172940-3 Alkalinity, Total	LCS (as CaCO3)		100.9		%		85-115	25-SEP-19
WG3172940-1 Alkalinity, Total	MB (as CaCO3)		<1.0		mg/L		1	25-SEP-19
Batch R4 WG3174443-4 Alkalinity, Total	848330 DUP (as CaCO3)	L2354648-1 53.9	54.0		mg/L	0.2	20	26-SEP-19
WG3174443-3 Alkalinity, Total	LCS (as CaCO3)		109.6		%		85-115	26-SEP-19
WG3174443-1 Alkalinity, Total	MB (as CaCO3)		<1.0		mg/L		1	26-SEP-19
CL-IC-N-VA	Water							
Batch R4 WG3172945-2 Chloride (CI)	841214 LCS		108.4		%		90-110	25-SEP-19
WG3172945-1 Chloride (CI)	МВ		<0.50		mg/L		0.5	25-SEP-19
WG3172945-4 Chloride (CI)	MS	L2353611-2	103.1		%		75-125	25-SEP-19
Batch R4	847748							
WG3174448-3 Chloride (CI)	DUP	L2353611-1 3.93	3.92		mg/L	0.3	20	26-SEP-19
WG3174448-2 Chloride (CI)	LCS		104.9		%		90-110	26-SEP-19
WG3174448-1 Chloride (CI)	MB		<0.50		mg/L		0.5	26-SEP-19
WG3174448-4 Chloride (CI)	MS	L2354987-6	104.9		%		75-125	26-SEP-19
EC-PCT-VA	Water							
Batch R4 WG3172940-3 Conductivity	843734 LCS		101.6		%		90-110	25-SEP-19
WG3172940-1 Conductivity	МВ		<2.0		uS/cm		90-110	25-SEP-19 25-SEP-19



Workorder: L2353611 Report Date: 02-OCT-19 Page 2 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-PCT-VA	Water							
Batch R4848330								
WG3174443-4 DUP Conductivity		L2354648-1 100	101		uS/cm	0.3	10	26-SEP-19
WG3174443-3 LCS Conductivity			103.0		%		90-110	26-SEP-19
WG3174443-1 MB Conductivity			<2.0		uS/cm		2	26-SEP-19
F-IC-N-VA	Water							
Batch R4841214								
WG3172945-2 LCS Fluoride (F)			100.5		%		90-110	25-SEP-19
WG3172945-1 MB Fluoride (F)			<0.020		mg/L		0.02	25-SEP-19
WG3172945-4 MS Fluoride (F)		L2353611-2	96.6		%		75-125	25-SEP-19
Batch R4847748								
WG3174448-3 DUP Fluoride (F)		L2353611-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	26-SEP-19
WG3174448-2 LCS Fluoride (F)			100.5		%		90-110	26-SEP-19
WG3174448-1 MB Fluoride (F)			<0.020		mg/L		0.02	26-SEP-19
WG3174448-4 MS Fluoride (F)		L2354987-6	100.4		%		75-125	26-SEP-19
HG-D-CVAA-VA	Water							
Batch R4842828								
WG3173856-11 DUP Mercury (Hg)-Dissolved		L2353398-2 <0.0000050	<0.000005	C RPD-NA	mg/L	N/A	20	26-SEP-19
WG3173856-10 LCS Mercury (Hg)-Dissolved			102.8		%		80-120	26-SEP-19
WG3173856-9 MB Mercury (Hg)-Dissolved			<0.000005	С	mg/L		0.000005	26-SEP-19
WG3173856-12 MS Mercury (Hg)-Dissolved		L2353398-1	81.8		%		70-130	26-SEP-19
HG-T-CVAA-VA	Water							



Workorder: L2353611 Report Date: 02-OCT-19 Page 3 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA	Water							
Batch R4847972								
WG3174710-11 DUP Mercury (Hg)-Total		L2352602-1 0.0000092	0.0000080		mg/L	13	20	27-SEP-19
WG3174710-16 DUP Mercury (Hg)-Total		L2354067-2 0.0000062	0.0000057		mg/L	9.1	20	27-SEP-19
WG3174710-18 DUP Mercury (Hg)-Total		L2354067-24 0.000170	0.000178		mg/L	4.6	20	27-SEP-19
WG3174710-20 DUP Mercury (Hg)-Total		L2354053-2 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174710-21 DUP Mercury (Hg)-Total		L2351825-2 0.0000056	0.0000069	J	mg/L	0.0000013	0.00001	27-SEP-19
WG3174710-3 DUP Mercury (Hg)-Total		L2351557-1 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174710-7 DUP Mercury (Hg)-Total		L2353097-19 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174710-9 DUP Mercury (Hg)-Total		L2349866-4 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174710-2 LCS Mercury (Hg)-Total			98.4		%		80-120	27-SEP-19
WG3174710-1 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	27-SEP-19
WG3174710-12 MS Mercury (Hg)-Total		L2352602-2	94.3		%		70-130	27-SEP-19
WG3174710-15 MS Mercury (Hg)-Total		L2354067-1	99.2		%		70-130	27-SEP-19
WG3174710-17 MS Mercury (Hg)-Total		L2354067-23	97.1		%		70-130	27-SEP-19
WG3174710-19 MS Mercury (Hg)-Total		L2354053-1	94.4		%		70-130	27-SEP-19
WG3174710-4 MS Mercury (Hg)-Total		L2354058-1	99.4		%		70-130	27-SEP-19
WG3174710-8 MS Mercury (Hg)-Total		L2353097-17	91.7		%		70-130	27-SEP-19
MET-D-CCMS-VA	Water							
Batch R4843890								
WG3173994-3 DUP Aluminum (AI)-Dissolved	I	L2354371-2 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-19
Antimony (Sb)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Arsenic (As)-Dissolved		0.00366	0.00369		mg/L			27-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test N	Matrix Referen	ce Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water						
Batch R4843890							
WG3173994-3 DUP Arsenic (As)-Dissolved	L23543 0.00366			mg/L	0.6	20	27-SEP-19
Barium (Ba)-Dissolved	0.0917	0.0949		mg/L	3.5	20	27-SEP-19
Beryllium (Be)-Dissolved	<0.000	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Bismuth (Bi)-Dissolved	<0.0000	050 < 0.00005	0 RPD-NA	mg/L	N/A	20	27-SEP-19
Boron (B)-Dissolved	0.012	0.012		mg/L	5.5	20	27-SEP-19
Cadmium (Cd)-Dissolved	<0.0000	0050 <0.00000	50 RPD-NA	mg/L	N/A	20	27-SEP-19
Calcium (Ca)-Dissolved	116	122		mg/L	5.5	20	27-SEP-19
Cesium (Cs)-Dissolved	<0.0000	0.00001	0 RPD-NA	mg/L	N/A	20	27-SEP-19
Chromium (Cr)-Dissolved	<0.000	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cobalt (Co)-Dissolved	0.00160	0.00167		mg/L	4.0	20	27-SEP-19
Copper (Cu)-Dissolved	<0.0002	0.00033	RPD-NA	mg/L	N/A	20	27-SEP-19
Iron (Fe)-Dissolved	2.22	2.26		mg/L	1.9	20	27-SEP-19
Lead (Pb)-Dissolved	<0.0000	050 < 0.00005	0 RPD-NA	mg/L	N/A	20	27-SEP-19
Lithium (Li)-Dissolved	0.0123	0.0128		mg/L	4.6	20	27-SEP-19
Magnesium (Mg)-Dissolve	d 36.6	38.4		mg/L	4.7	20	27-SEP-19
Manganese (Mn)-Dissolve	d 0.313	0.318		mg/L	1.8	20	27-SEP-19
Molybdenum (Mo)-Dissolve	ed 0.00147	0.00155		mg/L	5.1	20	27-SEP-19
Nickel (Ni)-Dissolved	0.00164	0.00162		mg/L	0.8	20	27-SEP-19
Phosphorus (P)-Dissolved	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	27-SEP-19
Potassium (K)-Dissolved	0.816	0.850		mg/L	4.0	20	27-SEP-19
Rubidium (Rb)-Dissolved	0.00029	0.00035		mg/L	17	20	27-SEP-19
Silicon (Si)-Dissolved	6.36	6.31		mg/L	0.8	20	27-SEP-19
Silver (Ag)-Dissolved	<0.0000	0.00001	0 RPD-NA	mg/L	N/A	20	27-SEP-19
Sodium (Na)-Dissolved	10.2	10.7		mg/L	4.6	20	27-SEP-19
Strontium (Sr)-Dissolved	0.347	0.366		mg/L	5.2	20	27-SEP-19
Sulfur (S)-Dissolved	48.2	47.2		mg/L	2.1	20	27-SEP-19
Tellurium (Te)-Dissolved	<0.0002	20 <0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Thallium (TI)-Dissolved	<0.0000	010 <0.00001	0 RPD-NA	mg/L	N/A	20	27-SEP-19
Thorium (Th)-Dissolved	<0.000	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Titanium (Ti)-Dissolved	<0.0003	<0.00030	RPD-NA	mg/L	N/A	20	27-SEP-19
Tungsten (W)-Dissolved	<0.000	0.00019	RPD-NA	mg/L	N/A	20	27-SEP-19
Uranium (U)-Dissolved	0.0013	0.00140		mg/L	6.3	20	27-SEP-19
Vanadium (V)-Dissolved	<0.0008	<0.00050		mg/L			27-SEP-19



Workorder: L2353611 Report Date: 02-OCT-19 Page 5 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4843890								
WG3173994-3 DUP		L2354371-2			,,			
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-SEP-19
Zinc (Zn)-Dissolved		0.0016	0.0023	J	mg/L	0.0007	0.002	27-SEP-19
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3173994-2 LCS Aluminum (Al)-Dissolved			111.0		%		80-120	27-SEP-19
Antimony (Sb)-Dissolved			98.4		%		80-120	27-SEP-19
Arsenic (As)-Dissolved			104.8		%		80-120	27-SEP-19
Barium (Ba)-Dissolved			101.5		%		80-120	27-SEP-19
Beryllium (Be)-Dissolved			98.6		%		80-120	27-SEP-19
Bismuth (Bi)-Dissolved			96.7		%		80-120	27-SEP-19
Boron (B)-Dissolved			98.2		%		80-120	27-SEP-19
Cadmium (Cd)-Dissolved			105.4		%		80-120	27-SEP-19
Calcium (Ca)-Dissolved			95.8		%		80-120	27-SEP-19
Cesium (Cs)-Dissolved			96.7		%		80-120	27-SEP-19
Chromium (Cr)-Dissolved			108.4		%		80-120	27-SEP-19
Cobalt (Co)-Dissolved			105.7		%		80-120	27-SEP-19
Copper (Cu)-Dissolved			104.1		%		80-120	27-SEP-19
Iron (Fe)-Dissolved			104.1		%		80-120	27-SEP-19
Lead (Pb)-Dissolved			95.2		%		80-120	27-SEP-19
Lithium (Li)-Dissolved			95.1		%		80-120	27-SEP-19
Magnesium (Mg)-Dissolve	ed		109.2		%		80-120	27-SEP-19
Manganese (Mn)-Dissolve	ed		105.6		%		80-120	27-SEP-19
Molybdenum (Mo)-Dissolv	/ed		97.9		%		80-120	27-SEP-19
Nickel (Ni)-Dissolved			105.7		%		80-120	27-SEP-19
Phosphorus (P)-Dissolved	t		111.5		%		70-130	27-SEP-19
Potassium (K)-Dissolved			108.7		%		80-120	27-SEP-19
Rubidium (Rb)-Dissolved			103.4		%		80-120	27-SEP-19
Selenium (Se)-Dissolved			100.5		%		80-120	27-SEP-19
Silicon (Si)-Dissolved			110.8		%		60-140	27-SEP-19
Silver (Ag)-Dissolved			93.8		%		80-120	27-SEP-19
Sodium (Na)-Dissolved			114.4		%		80-120	27-SEP-19
Strontium (Sr)-Dissolved			98.3		%		80-120	27-SEP-19
Sulfur (S)-Dissolved			101.0		%		80-120	27-SEP-19
Tellurium (Te)-Dissolved			98.6				80-120	



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4843890								
WG3173994-2 LCS Tellurium (Te)-Dissolved	ı		98.6		%		00.400	07.050.40
Thallium (TI)-Dissolved	l		99.0		%		80-120	27-SEP-19
Thailium (Tr)-Dissolved							80-120	27-SEP-19
,			90.5		%		80-120	27-SEP-19
Tin (Sn)-Dissolved			94.3		%		80-120	27-SEP-19
Titanium (Ti)-Dissolved			103.1		%		80-120	27-SEP-19
Tungsten (W)-Dissolved			95.6		%		80-120	27-SEP-19
Uranium (U)-Dissolved			94.5		%		80-120	27-SEP-19
Vanadium (V)-Dissolved			109.9		%		80-120	27-SEP-19
Zinc (Zn)-Dissolved			106.9		%		80-120	27-SEP-19
Zirconium (Zr)-Dissolved			93.7		%		80-120	27-SEP-19
WG3173994-1 MB Aluminum (Al)-Dissolved	ı		<0.0010		mg/L		0.001	27-SEP-19
Antimony (Sb)-Dissolved			<0.0010		mg/L		0.0001	27-SEP-19 27-SEP-19
Arsenic (As)-Dissolved	•		<0.00010		mg/L		0.0001	27-SEP-19 27-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	
Beryllium (Be)-Dissolved	l		<0.00010		mg/L		0.0001	27-SEP-19
Bismuth (Bi)-Dissolved			<0.00010	1	mg/L		0.0001	27-SEP-19 27-SEP-19
Boron (B)-Dissolved			<0.010	,	mg/L		0.000	
Cadmium (Cd)-Dissolved	4		<0.000005	5¢	mg/L		0.000005	27-SEP-19
Calcium (Ca)-Dissolved	u		<0.050).	mg/L		0.05	27-SEP-19
Cesium (Cs)-Dissolved			<0.00010	1			0.00001	27-SEP-19
Chromium (Cr)-Dissolved	d		<0.00010	J	mg/L		0.0001	27-SEP-19
, ,	u		<0.00010		mg/L		0.0001	27-SEP-19
Cobalt (Co)-Dissolved					mg/L		0.0001	27-SEP-19
Copper (Cu)-Dissolved Iron (Fe)-Dissolved			<0.00020 <0.010		mg/L		0.0002	27-SEP-19
Lead (Pb)-Dissolved				1	mg/L		0.00005	27-SEP-19
Lithium (Li)-Dissolved			<0.000050 <0.0010	J	mg/L			27-SEP-19
	vod.				mg/L		0.001	27-SEP-19
Magnesium (Mg)-Dissolv			<0.0050		mg/L		0.005	27-SEP-19
Manganese (Mn)-Dissolv			<0.00010	.	mg/L		0.0001	27-SEP-19
Molybdenum (Mo)-Disso	iiveu		<0.00050	J	mg/L		0.00005	27-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Phosphorus (P)-Dissolve			<0.050		mg/L		0.05	27-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Rubidium (Rb)-Dissolved	ג		<0.00020		mg/L		0.0002	27-SEP-19



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4843890								
WG3173994-1 MB Selenium (Se)-Dissolved	1		<0.000050)	mg/L		0.00005	27-SEP-19
Silicon (Si)-Dissolved	•		<0.050	,	mg/L		0.05	27-SEP-19
Silver (Ag)-Dissolved			<0.000010)	mg/L		0.00001	27-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Strontium (Sr)-Dissolved	I		<0.00020		mg/L		0.0002	27-SEP-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-SEP-19
Tellurium (Te)-Dissolved	İ		<0.00020		mg/L		0.0002	27-SEP-19
Thallium (TI)-Dissolved			<0.000010)	mg/L		0.00001	27-SEP-19
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-SEP-19
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Uranium (U)-Dissolved			<0.000010)	mg/L		0.00001	27-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Zirconium (Zr)-Dissolved	d		<0.00020		mg/L		0.0002	27-SEP-19
WG3173994-4 MS	1	L2354371-1	101 5		0/		70.400	07.050.40
Aluminum (Al)-Dissolved			101.5 91.4		%		70-130	27-SEP-19
Antimony (Sb)-Dissolved	1				%		70-130	27-SEP-19
Arsenic (As)-Dissolved Barium (Ba)-Dissolved			114.9 N/A	MS-B	% %		70-130	27-SEP-19
Beryllium (Be)-Dissolved	ı		89.3	IVIO-D	%		70.400	27-SEP-19
Bismuth (Bi)-Dissolved	l		77.2		%		70-130	27-SEP-19
Boron (B)-Dissolved			90.3		%		70-130	27-SEP-19
Cadmium (Cd)-Dissolve	d		100.1		%		70-130 70-130	27-SEP-19 27-SEP-19
Calcium (Ca)-Dissolved	u		N/A	MS-B	%		70-130	27-SEP-19
Cesium (Cs)-Dissolved			93.9	WO B	%		70-130	27-SEP-19
Chromium (Cr)-Dissolve	d		99.7		%		70-130	27-SEP-19
Cobalt (Co)-Dissolved	-		97.3		%		70-130	27-SEP-19
Copper (Cu)-Dissolved			94.7		%		70-130	27-SEP-19
Iron (Fe)-Dissolved			100.4		%		70-130	27-SEP-19
Lead (Pb)-Dissolved			83.2		%		70-130	27-SEP-19
Lithium (Li)-Dissolved			84.6		%		70-130	27-SEP-19
Magnesium (Mg)-Dissol	ved		N/A	MS-B	%		-	27-SEP-19
3 (3,				-				



Workorder: L2353611 Report Date: 02-OCT-19 Page 8 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Metro-CCMS-VA	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Manganese (Mn)-Dissolved	MET-D-CCMS-VA	Water							
Malaganese (Mr)-Dissolved	Batch R4843	890							
Mollybdenum (Mol)-Dissolved 95.1 % 70.130 27.5EP-19 Nickel (Ni)-Dissolved 94.3 % 70.130 27.5EP-19 Phosphorus (P)-Dissolved 112.6 % 70.130 27.5EP-19 Phosphorus (R)-Dissolved 194.9 % 70.130 27.5EP-19 Rubidium (Rb)-Dissolved 99.4 % 70.130 27.5EP-19 Selenium (Se)-Dissolved 99.4 % 70.130 27.5EP-19 Selenium (Se)-Dissolved 99.4 % 70.130 27.5EP-19 Silver (Ag)-Dissolved 99.4 74.7 % 70.130 27.5EP-19 Silver (Ag)-Dissolved 74.7 % 70.130 27.5EP-19 Silver (Ag)-Dissolved 74.7 % 70.130 27.5EP-19 Silver (Ag)-Dissolved 70.130 27.5EP-19 Strontium (Sr)-Dissolved 70.130 27.5EP-19 Strontium (Sr)-Dissolved 70.130 27.5EP-19 Strontium (Sr)-Dissolved 70.130 27.5EP-19 Strontium (Th)-Dissolved 85.9 70.130 27.5EP-19 Tellurium (Te)-Dissolved 84.7 70.130 27.5EP-19 Thalium (Th)-Dissolved 92.3 % 70.130 27.5EP-19 Thorium (Th)-Dissolved 92.3 % 70.130 27.5EP-19 Tin (Sh)-Dissolved 92.6 % 70.130 27.5EP-19 Tin (Sh)-Dissolved 90.0 % 70.130 27.5EP-19 Tungsten (W)-Dissolved 90.0 % 70.130 27.5EP-19 Uranium (U)-Dissolved 90.0 % 70.130 27.5EP-19 Uranium (U)-Dissolved 95.2 70.130 27.5EP-19 Uranium (U)-Dissolved 95.2 70.130 27.5EP-19 Zinc (Zn)-Dissolved 95.2 70.130 27.5EP-19 Zinc (Zn)-Dissolved 95.2 70.130 27.5EP-19 Aluminum (Zh)-Dissolved 90.0000 8PD-NA mg/L NA 20 27.5EP-19 Aluminum (Jh)-Total 0.00161 0.00155 mg/L NA 20 27.5EP-19 Aluminum (Bh)-Total 0.00101 0.00020 RPD-NA mg/L NA 20 27.5EP-19 Beryllium (Be)-Total 0.00010 0.000010 RPD-NA mg/L NA 20 27.5EP-19 Beryllium (Be)-Total 0.00010 0.000010 RPD-NA mg/L NA 20 27.5EP-19 Beryllium (Be)-Total 0.00010 0.00010 RPD-NA mg/L NA 20 27.5EP-19			L2354371-1	NI/A	MC D	9/6			27 CED 40
Nickel (Ni)-Dissolved 94.3 % 70-130 27-SEP-19 Phosphorus (P)-Dissolved 112.6 % 70-130 27-SEP-19 Phosphorus (P)-Dissolved 112.6 % 70-130 27-SEP-19 Phosphorus (P)-Dissolved 104.9 % 70-130 27-SEP-19 Phosphorus (R)-Dissolved 104.9 % 70-130 27-SEP-19 Rubidium (Rb)-Dissolved 124.5 % 70-130 27-SEP-19 Selenium (Se)-Dissolved 124.5 % 70-130 27-SEP-19 Silvor (Ag)-Dissolved 124.5 % 70-130 27-SEP-19 Silvor (Ag)-Dissolved 124.5 % 70-130 27-SEP-19 Silvor (Ag)-Dissolved 14.7 % 70-130 27-SEP-19 Silvor (Ag)-Dissolved 14.7 % 70-130 27-SEP-19 Silvor (Ag)-Dissolved 14.0 MA MS-B % 70-130 27-SEP-19 Sitrontium (Sr)-Dissolved 14.0 MA MS-B % 70-130 27-SEP-19 Silvor (S)-Dissolved 14.0 MA MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 14.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 14.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 14.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 14.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 14.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 15.0 MS-B % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 10.8 % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 10.8 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.8 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.8 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.8 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.5 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19 Tin (Ci)-Dissolved 10.0 % 70-130 27-SEP-19					IVIO-D			- 70 120	
Phosphorus (P)-Dissolved									
Potassium (K)-Dissolved 104.9	` '								
Rubidium (Rb)-Dissolved 99.4 % 70-130 27-SEP-19 Selenium (Se)-Dissolved 124.5 % 70-130 27-SEP-19 Selenium (Se)-Dissolved 99.7 % 70-130 27-SEP-19 Silver (Ag)-Dissolved 74.7 % 70-130 27-SEP-19 Silver (Ag)-Dissolved 74.7 % 70-130 27-SEP-19 Silver (Ag)-Dissolved 74.7 % 70-130 27-SEP-19 Sodium (Na)-Dissolved NA MS-B % 70-130 27-SEP-19 Strontium (Sr)-Dissolved NA MS-B % 70-130 27-SEP-19 Strontium (Sr)-Dissolved NA MS-B % 70-130 27-SEP-19 Sulfur (S)-Dissolved NA MS-B % 70-130 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thallium (Th)-Dissolved 92.3 % 70-130 27-SEP-19 Thorium (Th)-Dissolved 92.3 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (W)-Dissolved 88.2 % 70-130 27-SEP-19 Uranium (W)-Dissolved 88.2 % 70-130 27-SEP-19 Uranium (W)-Dissolved 88.2 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 95.2 % 70-130 27-SEP-19 Zinc (Z									
Selenium (Se)-Dissolved 124.5 % 70.130 27-SEP-19 Silicon (Si)-Dissolved 94.7 % 70.130 27-SEP-19 Silver (Ag)-Dissolved 74.7 % 70.130 27-SEP-19 Sodium (Na)-Dissolved N/A MS-B % - 27-SEP-19 Strontium (Sr)-Dissolved N/A MS-B % - 27-SEP-19 Sulfur (Sp)-Dissolved N/A MS-B % - 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thorium (Th)-Dissolved 84.7 % 70-130 27-SEP-19 Thorium (Ti)-Dissolved 92.3 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 92.6 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 88.2 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Zirconiu	` ,								
Silicon (Si)-Dissolved 94.7 % 70.130 27-SEP-19 Silver (Ag)-Dissolved 74.7 % 70.130 27-SEP-19 Sodium (Na)-Dissolved N/A MS-B % - 27-SEP-19 Strontium (Sr)-Dissolved N/A MS-B % - 27-SEP-19 Sulfur (S)-Dissolved N/A MS-B % - 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thallium (Ti)-Dissolved 92.3 % 70-130 27-SEP-19 Thorium (Th)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 90.0 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 88.2 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 WET-T-CCMS-V									
Silver (Ag)-Dissolved									
Sodium (Na)-Dissolved N/A MS-B % - 27-SEP-19 Strontium (Sr)-Dissolved N/A MS-B % - 27-SEP-19 Sulfur (S)-Dissolved N/A MS-B % - 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thallium (Th)-Dissolved 92.3 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 90.0 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 93.8 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Water 70-130 27-SEP-19 MET-T-CCMS-VA Water Water 70-130 27-SEP-19 Aluminum (A)-Total									
Strontium (Sr)-Dissolved N/A MS-B % - 27-SEP-19 Sulfur (S)-Dissolved N/A MS-B % - 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thallium (Ti)-Dissolved 92.3 % 70-130 27-SEP-19 Tincrium (Th)-Dissolved 92.6 % 70-130 27-SEP-19 Tincrium (Ti)-Dissolved 92.6 % 70-130 27-SEP-19 Tincrium (Ti)-Dissolved 90.8 70-130 27-SEP-19 Tungsten (W)-Dissolved 90.0 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 93.8 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Water 70-130 27-SEP-19 MET-T-CCMS-VA Water Water 70-130 27-SEP-19 Aluminum (A)-Total <0.0000					MS B			70-130	
Sulfur (S)-Dissolved N/A MS-B % - 27-SEP-19 Tellurium (Te)-Dissolved 85.9 % 70.130 27-SEP-19 Thallium (TI)-Dissolved 84.7 % 70.130 27-SEP-19 Thorium (Th)-Dissolved 92.3 % 70.130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70.130 27-SEP-19 Tin (Sn)-Dissolved 100.8 % 70.130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70.130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70.130 27-SEP-19 Vanadium (V)-Dissolved 93.8 % 70.130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70.130 27-SEP-19 MET-CCMS-VA Water Water 8 Yes 70.130 27-SEP-19 MET-T-CCMS-VA Water Water Yes 70.130 27-SEP-19 Aluminum (Al)-Total <0.0060								-	
Tellurium (Te)-Dissolved 85.9 % 70-130 27-SEP-19 Thallium (TI)-Dissolved 84.7 % 70-130 27-SEP-19 Thorium (Th)-Dissolved 92.3 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 100.8 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 93.8 % 70-130 27-SEP-19 Zirconium (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 MET-CCMS-VA Water Batch R4844376 RASA4376 RPD-NA mg/L N/A 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L N/A 20 27-SEP-19 Barium (Ba)-Total 0.00103 0.0102 RPD-NA mg/L N/A 20 27-SEP-19								-	
Thallium (TI)-Dissolved 84.7 % 70-130 27-SEP-19 Thorium (Th)-Dissolved 92.3 % 70-130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 100.8 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 93.8 % 70-130 27-SEP-19 Zirco (Zn)-Dissolved 95.2 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 WG3174064-3 DUP L2353876-1 VANA 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L N/A 20 27-SEP-19 Arsenic (As)-Total 0.00020 <0.00020					M3-B			70 120	
Thorium (Th)-Dissolved 92.3 % 70.130 27-SEP-19 Tin (Sn)-Dissolved 92.6 % 70.130 27-SEP-19 Titanium (Ti)-Dissolved 100.8 % 70.130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70.130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70.130 27-SEP-19 Vanadium (V)-Dissolved 105.4 % 70.130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70.130 27-SEP-19 Zirconium (Zr)-Dissolved 95.2 % 70.130 27-SEP-19 MET-T-CCMS-VA Water Water 70.130 27-SEP-19 MET-T-CCMS-VA Water Water Value 70.130 27-SEP-19 Aluminum (Al)-Total <0.0060									
Tin (Sn)-Dissolved 92.6 % 70-130 27-SEP-19 Titanium (Ti)-Dissolved 100.8 % 70-130 27-SEP-19 Tungsten (W)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 105.4 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zinconium (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 Zinconium (Zr)-Dissolved Patch Pat	` ,								
Titanium (Ti)-Dissolved	, ,	ived							
Tungsten (W)-Dissolved 90.0 % 70-130 27-SEP-19 Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 105.4 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zirconjum (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 Zirconjum (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 WG3174064-3 DUP L2353876-1 Aluminum (Al)-Total <0.0060 <0.0060 RPD-NA mg/L N/A 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L 4.0 20 27-SEP-19 Arsenic (As)-Total <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Barium (Ba)-Total 0.0103 0.0102 mg/L 1.0 20 27-SEP-19 Beryllium (Be)-Total <0.00010 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Beryllium (Be)-Total <0.00010 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total <0.00010 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Boron (B)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19		ved							
Uranium (U)-Dissolved 88.2 % 70-130 27-SEP-19 Vanadium (V)-Dissolved 105.4 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 WG3174064-3 DUP Aluminum (Al)-Total L2353876-1 N/A 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L N/A 20 27-SEP-19 Arsenic (As)-Total <0.00020									
Vanadium (V)-Dissolved 105.4 % 70-130 27-SEP-19 Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 WG3174064-3 DUP Aluminum (Al)-Total L2353876-1 N/A 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L 4.0 20 27-SEP-19 Arsenic (As)-Total <0.00020									
Zinc (Zn)-Dissolved 93.8 % 70-130 27-SEP-19 Zirconium (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 WG3174064-3 DUP L2353876-1 Seppendent of the color of the	` ,								
Zirconium (Zr)-Dissolved 95.2 % 70-130 27-SEP-19 MET-T-CCMS-VA Water Batch R4844376 R4844376 R4844376 R4844376 R4844376 R4844376 R4844376 RAD-NA mg/L N/A 20 27-SEP-19 Aluminum (Al)-Total <0.0060									
MET-T-CCMS-VA Water Batch R4844376 R4844376 WG3174064-3 DUP Aluminum (Al)-Total L2353876-1 Antimony (Sb)-Total <0.0060									
Batch R4844376 WG3174064-3 DUP L2353876-1 Aluminum (Al)-Total <0.0060				00.2		,,,		70-130	27-321-19
WG3174064-3 DUP L2353876-1 Aluminum (Al)-Total < 0.0060 < 0.0060 RPD-NA mg/L N/A 20 27-SEP-19 Antimony (Sb)-Total 0.00161 0.00155 mg/L 4.0 20 27-SEP-19 Arsenic (As)-Total < 0.00020 < 0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Barium (Ba)-Total 0.0103 0.0102 mg/L 1.0 20 27-SEP-19 Beryllium (Be)-Total < 0.00010 < 0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total < 0.00010 < 0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Boron (B)-Total 0.134 0.127 mg/L 5.4 20 27-SEP-19									
Antimony (Sb)-Total 0.00161 0.00155 mg/L 4.0 20 27-SEP-19 Arsenic (As)-Total <0.00020	WG3174064-3 DI	JP							
Arsenic (As)-Total <0.00020					RPD-NA	-			
Barium (Ba)-Total 0.0103 0.0102 mg/L 1.0 20 27-SEP-19 Beryllium (Be)-Total <0.00010		I							27-SEP-19
Beryllium (Be)-Total <0.00010 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total <0.00010					RPD-NA	-			27-SEP-19
Bismuth (Bi)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Boron (B)-Total 0.134 0.127 mg/L 5.4 20 27-SEP-19							1.0	20	27-SEP-19
Boron (B)-Total 0.134 0.127 mg/L 5.4 20 27-SEP-19	, , ,					mg/L	N/A	20	27-SEP-19
			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cadmium (Cd)-Total 0.000557 0.000544 mg/L 2.3 20 27-SEP-19			0.134	0.127		mg/L	5.4	20	27-SEP-19
	Cadmium (Cd)-Tota	al	0.000557	0.000544		mg/L	2.3	20	27-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							_
Batch R4844376								
WG3174064-3 DUP Calcium (Ca)-Total		L2353876-1 401	383		mg/L	4.6	20	27-SEP-19
Cesium (Cs)-Total		0.000183	0.000162		mg/L	12	20	27-SEP-19
Chromium (Cr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Cobalt (Co)-Total		0.0801	0.0803		mg/L	0.2	20	27-SEP-19
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-19
Iron (Fe)-Total		0.052	0.053		mg/L	1.1	20	27-SEP-19
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Lithium (Li)-Total		0.122	0.116		mg/L	4.9	20	27-SEP-19
Magnesium (Mg)-Total		186	181		mg/L	2.7	20	27-SEP-19
Manganese (Mn)-Total		0.489	0.489		mg/L	0.1	20	27-SEP-19
Molybdenum (Mo)-Total		0.00495	0.00474		mg/L	4.2	20	27-SEP-19
Nickel (Ni)-Total		0.344	0.348		mg/L	1.0	20	27-SEP-19
Phosphorus (P)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-SEP-19
Potassium (K)-Total		8.00	7.68		mg/L	4.0	20	27-SEP-19
Rubidium (Rb)-Total		0.0105	0.0107		mg/L	1.8	20	27-SEP-19
Selenium (Se)-Total		0.00208	0.00200		mg/L	3.9	20	27-SEP-19
Silicon (Si)-Total		2.89	2.78		mg/L	4.1	20	27-SEP-19
Silver (Ag)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-SEP-19
Sodium (Na)-Total		82.1	82.7		mg/L	0.8	20	27-SEP-19
Strontium (Sr)-Total		1.67	1.58		mg/L	5.4	20	27-SEP-19
Sulfur (S)-Total		513	505		mg/L	1.4	20	27-SEP-19
Tellurium (Te)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	27-SEP-19
Thallium (TI)-Total		0.000126	0.000128		mg/L	0.9	20	27-SEP-19
Thorium (Th)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Tin (Sn)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-SEP-19
Tungsten (W)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Uranium (U)-Total		0.0146	0.0148		mg/L	1.3	20	27-SEP-19
Vanadium (V)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-19
Zinc (Zn)-Total		0.0793	0.0780		mg/L	1.5	20	27-SEP-19
Zirconium (Zr)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3173572-2 LCS Aluminum (Al)-Total			106.8		%		80-120	26-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4844376								
WG3173572-2 LCS			444.0		0/			
Antimony (Sb)-Total			111.3		%		80-120	26-SEP-19
Arsenic (As)-Total			104.5		%		80-120	26-SEP-19
Barium (Ba)-Total			104.2		%		80-120	26-SEP-19
Beryllium (Be)-Total			91.8		%		80-120	26-SEP-19
Bismuth (Bi)-Total			107.9		%		80-120	26-SEP-19
Boron (B)-Total			92.3		%		80-120	26-SEP-19
Cadmium (Cd)-Total			102.2		%		80-120	26-SEP-19
Calcium (Ca)-Total			93.8		%		80-120	26-SEP-19
Cesium (Cs)-Total			104.6		%		80-120	26-SEP-19
Chromium (Cr)-Total			108.7		%		80-120	26-SEP-19
Cobalt (Co)-Total			103.4		%		80-120	26-SEP-19
Copper (Cu)-Total			101.4		%		80-120	26-SEP-19
Iron (Fe)-Total			106.2		%		80-120	26-SEP-19
Lead (Pb)-Total			103.1		%		80-120	26-SEP-19
Lithium (Li)-Total			92.6		%		80-120	26-SEP-19
Magnesium (Mg)-Total			102.2		%		80-120	26-SEP-19
Manganese (Mn)-Total			106.2		%		80-120	26-SEP-19
Molybdenum (Mo)-Total			110.8		%		80-120	26-SEP-19
Nickel (Ni)-Total			105.9		%		80-120	26-SEP-19
Phosphorus (P)-Total			113.5		%		80-120	26-SEP-19
Potassium (K)-Total			104.6		%		80-120	26-SEP-19
Rubidium (Rb)-Total			105.0		%		80-120	26-SEP-19
Selenium (Se)-Total			105.9		%		80-120	26-SEP-19
Silicon (Si)-Total			102.5		%		80-120	26-SEP-19
Silver (Ag)-Total			108.7		%		80-120	26-SEP-19
Sodium (Na)-Total			102.7		%		80-120	26-SEP-19
Strontium (Sr)-Total			109.8		%		80-120	26-SEP-19
Sulfur (S)-Total			105.1		%		80-120	26-SEP-19
Tellurium (Te)-Total			113.0		%		80-120	26-SEP-19
Thallium (TI)-Total			104.9		%		80-120	26-SEP-19
Thorium (Th)-Total			96.5		%		80-120	26-SEP-19
Tin (Sn)-Total			100.8		%		80-120	26-SEP-19
Titanium (Ti)-Total			104.1		%		80-120	26-SEP-19



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400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4844376								
WG3173572-2 LCS Tungsten (W)-Total			104.2		%		80-120	26-SEP-19
Uranium (U)-Total			102.0		%		80-120	26-SEP-19
Vanadium (V)-Total			107.8		%		80-120	26-SEP-19
Zinc (Zn)-Total			99.3		%		80-120	26-SEP-19
Zirconium (Zr)-Total			105.8		%		80-120	26-SEP-19
WG3174064-2 LCS Aluminum (Al)-Total			103.6		%		80-120	26-SEP-19
Antimony (Sb)-Total			109.4		%		80-120	26-SEP-19
Arsenic (As)-Total			99.9		%		80-120	26-SEP-19 26-SEP-19
Barium (Ba)-Total			101.0		%		80-120	26-SEP-19
Beryllium (Be)-Total			99.2		%		80-120	26-SEP-19
Bismuth (Bi)-Total			103.4		%		80-120	26-SEP-19
Boron (B)-Total			97.0		%		80-120	26-SEP-19
Cadmium (Cd)-Total			102.3		%		80-120	26-SEP-19
Calcium (Ca)-Total			98.9		%		80-120	26-SEP-19
Cesium (Cs)-Total			101.9		%		80-120	26-SEP-19
Chromium (Cr)-Total			103.2		%		80-120	26-SEP-19
Cobalt (Co)-Total			99.4		%		80-120	26-SEP-19
Copper (Cu)-Total			98.5		%		80-120	26-SEP-19
Iron (Fe)-Total			102.2		%		80-120	26-SEP-19
Lead (Pb)-Total			101.7		%		80-120	26-SEP-19
Lithium (Li)-Total			97.1		%		80-120	26-SEP-19
Magnesium (Mg)-Total			103.7		%		80-120	26-SEP-19
Manganese (Mn)-Total			106.9		%		80-120	26-SEP-19
Molybdenum (Mo)-Total			108.3		%		80-120	26-SEP-19
Nickel (Ni)-Total			100.8		%		80-120	26-SEP-19
Phosphorus (P)-Total			104.4		%		80-120	26-SEP-19
Potassium (K)-Total			100.5		%		80-120	26-SEP-19
Rubidium (Rb)-Total			101.2		%		80-120	26-SEP-19
Selenium (Se)-Total			105.8		%		80-120	26-SEP-19
Silicon (Si)-Total			101.9		%		80-120	26-SEP-19
Silver (Ag)-Total			107.4		%		80-120	26-SEP-19
Sodium (Na)-Total			102.0		%		80-120	26-SEP-19
Strontium (Sr)-Total			106.8		%		80-120	26-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4844376 WG3174064-2 LCS								
Sulfur (S)-Total			102.1		%		80-120	26-SEP-19
Tellurium (Te)-Total			113.3		%		80-120	26-SEP-19
Thallium (TI)-Total			102.4		%		80-120	26-SEP-19
Thorium (Th)-Total			96.5		%		80-120	26-SEP-19
Tin (Sn)-Total			102.2		%		80-120	26-SEP-19
Titanium (Ti)-Total			100.8		%		80-120	26-SEP-19
Tungsten (W)-Total			102.5		%		80-120	26-SEP-19
Uranium (U)-Total			99.7		%		80-120	26-SEP-19
Vanadium (V)-Total			102.6		%		80-120	26-SEP-19
Zinc (Zn)-Total			97.2		%		80-120	26-SEP-19
Zirconium (Zr)-Total			104.3		%		80-120	26-SEP-19
WG3173572-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	26-SEP-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	26-SEP-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	26-SEP-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	26-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	26-SEP-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Phosphorus (P)-Total			< 0.050		mg/L		0.05	26-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	26-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4844376								
WG3173572-1 MB Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	26-SEP-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	26-SEP-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	26-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	26-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-SEP-19
Sulfur (S)-Total			<0.50		mg/L		0.5	26-SEP-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	26-SEP-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	26-SEP-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-SEP-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	26-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-SEP-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	26-SEP-19
WG3174064-1 MB								
Aluminum (AI)-Total			<0.0030		mg/L		0.003	26-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	26-SEP-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	26-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-SEP-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	26-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	26-SEP-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	26-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-SEP-19



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Metr-T-CCMS-VA	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WOSTYAORS-IL MIS Magnesium (Mg)-Total 40.0050 mg/L 0.0051 26 sEP-19 Manganese (Mn)-Total 40.00010 mg/L 0.00051 26 sEP-19 Molybdenum (Mo)-Total 40.00050 mg/L 0.0005 26 sEP-19 Nickol (Ni)-Total 40.00050 mg/L 0.005 26 sEP-19 Phosphorus (P)-Total 40.050 mg/L 0.05 26 sEP-19 Potassium (K)-Total 40.050 mg/L 0.05 26 sEP-19 Rubidium (Rb)-Total 40.00020 mg/L 0.0002 26 sEP-19 Selenium (Se)-Total 40.000050 mg/L 0.00002 26 sEP-19 Silver (Ag)-Total 40.000010 mg/L 0.00001 26 sEP-19 Sodium (Na)-Total 40.00010 mg/L 0.00 26 sEP-19 Stronium (S)-Total 40.00020 mg/L 0.00 26 sEP-19 Stronium (S)-Total 40.00020 mg/L 0.00 26 sEP-19 Tellurium (T)-Total 40.00020 mg/L 0.0002 26 sEP-19	MET-T-CCMS-VA	Water							
Manganese (Mn)-Total	Batch R4844376								
Manganese (Min)-Total				-0.00E0		ma/l		0.005	00.055.40
Molybdenum (Mo)-Total						_			
Nickel (Ni)-Total					n				
Phosphorus (P)-Total					U	•			
Potassium (K)-Total									
Rubidium (Rb)-Total <0.00020 mg/L 0.0002 26-SEP-19 Selenium (Se)-Total <0.000050									
Selenium (Se)-Total 0.000050 mg/L 0.0005 26-SEP-19 Silicon (Si)-Total <0.10	()								
Silicon (S)-Total <0.10 mg/L 0.1 26-SEP-19 Silver (Ag)-Total <0.000010					n				
Silver (Ag)-Total					U	•			
Sodium (Na)-Total <0.050 mg/L 0.05 26-SEP-19 Strontium (Sr)-Total <0.00020					n	-			
Strontium (Sr)-Total					U	_			
Sulfur (S)-Total <0.50	` ,								
Tellurium (Te)-Total						•			
Thallium (TI)-Total									
Thorium (Th)-Total <0.00010					n	•			
Tin (Sn)-Total	,				U				
Titanium (Ti)-Total <0.00030									
Tungsten (W)-Total <0.00010						•			
Uranium (U)-Total <0.000010						•			
Vanadium (V)-Total <0.00050	3				n	•			
Zinc (Zn)-Total <0.0030 mg/L 0.003 26-SEP-19 Zirconium (Zr)-Total <0.00020 mg/L 0.0002 26-SEP-19 WG3173572-4 MS Aluminum (Al)-Total L2353204-2 V 70-130 26-SEP-19 Antimony (Sb)-Total 102.0 % 70-130 26-SEP-19 Antimony (Sb)-Total 104.0 % 70-130 26-SEP-19 Arsenic (As)-Total N/A MS-B % 70-130 26-SEP-19 Barium (Ba)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19					U				
Zirconium (Zr)-Total <0.00020 mg/L 0.0002 26-SEP-19 WG3173572-4 MS Aluminum (Al)-Total L2353204-2 V 70-130 26-SEP-19 Antimony (Sb)-Total 102.0 % 70-130 26-SEP-19 Antimony (Sb)-Total 106.4 % 70-130 26-SEP-19 Arsenic (As)-Total 104.0 % 70-130 26-SEP-19 Barium (Ba)-Total N/A MS-B % 70-130 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19	,					-			
WG3173572-4 MS Aluminum (Al)-Total 102.0 % 70-130 26-SEP-19 Antimony (Sb)-Total 106.4 % 70-130 26-SEP-19 Arsenic (As)-Total 104.0 % 70-130 26-SEP-19 Barium (Ba)-Total N/A MS-B % - 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % 70-130 26-SEP-19						_			
Aluminum (Al)-Total 102.0 % 70-130 26-SEP-19 Antimony (Sb)-Total 106.4 % 70-130 26-SEP-19 Arsenic (As)-Total 104.0 % 70-130 26-SEP-19 Barium (Ba)-Total N/A MS-B % - 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19			1.0050004.0	<0.00020		mg/L		0.0002	26-SEP-19
Antimony (Sb)-Total 106.4 % 70-130 26-SEP-19 Arsenic (As)-Total 104.0 % 70-130 26-SEP-19 Barium (Ba)-Total N/A MS-B % - 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19			L23532U4-2	102.0		%		70-130	26-SEP-19
Arsenic (As)-Total 104.0 % 70-130 26-SEP-19 Barium (Ba)-Total N/A MS-B % - 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19									
Barium (Ba)-Total N/A MS-B % - 26-SEP-19 Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19									
Beryllium (Be)-Total 88.8 % 70-130 26-SEP-19 Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19					MS-B			-	
Bismuth (Bi)-Total 94.7 % 70-130 26-SEP-19 Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19	Beryllium (Be)-Total			88.8		%		70-130	
Boron (B)-Total 88.8 % 70-130 26-SEP-19 Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19				94.7		%			
Cadmium (Cd)-Total 99.5 % 70-130 26-SEP-19 Calcium (Ca)-Total N/A MS-B % - 26-SEP-19	Boron (B)-Total					%			
Calcium (Ca)-Total N/A MS-B % - 26-SEP-19									
	Calcium (Ca)-Total				MS-B	%			
								70-130	



Workorder: L2353611 Report Date: 02-OCT-19 Page 15 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4844376								
WG3173572-4 MS		L2353204-2	400.0		0/			
Chromium (Cr)-Total			106.2		%		70-130	26-SEP-19
Cobalt (Co)-Total			97.6		%		70-130	26-SEP-19
Copper (Cu)-Total			92.4		%		70-130	26-SEP-19
Iron (Fe)-Total			100.7		%		70-130	26-SEP-19
Lead (Pb)-Total			96.3		%		70-130	26-SEP-19
Lithium (Li)-Total			89.7		%		70-130	26-SEP-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	26-SEP-19
Manganese (Mn)-Total			101.1		%		70-130	26-SEP-19
Molybdenum (Mo)-Tota	I		N/A	MS-B	%		-	26-SEP-19
Nickel (Ni)-Total			98.2		%		70-130	26-SEP-19
Phosphorus (P)-Total			107.7		%		70-130	26-SEP-19
Potassium (K)-Total			N/A	MS-B	%		-	26-SEP-19
Rubidium (Rb)-Total			101.1		%		70-130	26-SEP-19
Selenium (Se)-Total			111.9		%		70-130	26-SEP-19
Silicon (Si)-Total			N/A	MS-B	%		-	26-SEP-19
Silver (Ag)-Total			106.4		%		70-130	26-SEP-19
Sodium (Na)-Total			N/A	MS-B	%		-	26-SEP-19
Strontium (Sr)-Total			N/A	MS-B	%		-	26-SEP-19
Sulfur (S)-Total			N/A	MS-B	%		-	26-SEP-19
Tellurium (Te)-Total			109.1		%		70-130	26-SEP-19
Thallium (TI)-Total			97.3		%		70-130	26-SEP-19
Thorium (Th)-Total			104.4		%		70-130	26-SEP-19
Tin (Sn)-Total			101.6		%		70-130	26-SEP-19
Titanium (Ti)-Total			101.9		%		70-130	26-SEP-19
Tungsten (W)-Total			103.6		%		70-130	26-SEP-19
Uranium (U)-Total			N/A	MS-B	%		-	26-SEP-19
Vanadium (V)-Total			105.7		%		70-130	26-SEP-19
Zinc (Zn)-Total			94.3		%		70-130	26-SEP-19
Zirconium (Zr)-Total			110.9		%		70-130	26-SEP-19
Batch R4848770								
WG3173572-3 DUP Aluminum (Al)-Total		L2353204-1 1.10	1.02		mg/L	7.5	20	27-SEP-19
Antimony (Sb)-Total		0.00011	0.00010		mg/L	3.7	20	27-SEP-19
Arsenic (As)-Total		0.00104	0.00100		mg/L		-	27-SEP-19
()					<i>3-</i>			2. 02. 10



Workorder: L2353611 Report Date: 02-OCT-19 Page 16 of 21

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Metr-CCMS-VA R484877	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Most73573-3 DUP Arsenic (As)-Total 0.00104 0.00100 mg/L 4.2 20 27-SEP-19 Barlum (Ba)-Total 0.0711 0.0690 mg/L 3.1 20 27-SEP-19 Benyfilium (Be)-Total 0.00000 0.00000 0.00000 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Total 0.000050 0.000050 RPD-NA mg/L N/A 20 27-SEP-19 Boron (B)-Total 0.00016 0.00016 RPD-NA mg/L N/A 20 27-SEP-19 Boron (B)-Total 0.00016 0.000152 mg/L 11 20 27-SEP-19 Cadmium (Cal)-Total 103 105 mg/L 1.9 20 27-SEP-19 Calcium (Ca)-Total 103 105 mg/L 1.9 20 27-SEP-19 Calcium (Ca)-Total 0.000083 0.000062 mg/L 0.7 20 27-SEP-19 Cobstit (Co)-Total 0.000083 0.00062 mg/L 2.7 20 27-SEP-19 Cobstit (Co)-Total 0.000072 0.00072 mg/L 0.2 20 27-SEP-19 Copper (Cu)-Total 0.00004 0.0109 mg/L 4.8 20 27-SEP-19 Lead (Pb)-Total 0.000643 0.000513 mg/L 6.6 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 6.6 20 27-SEP-19 Marganese (Mh)-Total 0.0062 0.0028 mg/L 1.6 20 27-SEP-19 Marganese (Mh)-Total 0.0062 0.0052 mg/L 1.6 20 27-SEP-19 Molybdonum (Mo)-Total 0.00682 0.0055 mg/L 3.7 20 27-SEP-19 Molybdonum (Mo)-Total 0.00164 0.00109 mg/L 3.7 20 27-SEP-19 Potassium (K)-Total 0.0186 0.202 mg/L 3.3 20 27-SEP-19 Potassium (K)-Total 0.0186 0.202 mg/L 3.3 20 27-SEP-19 Potassium (K)-Total 0.0186 0.00102 mg/L 3.0 20 27-SEP-19 Potassium (K)-Total 0.0186 0.00103 mg/L 3.6 20 27-SEP-19 Silicon (Si)-Total 0.0014 0.00199 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.0014 0.00199 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.0018 0.00003 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.0018 0.00003 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.00018 0.00018 mg/L 0.4 20 27-SEP-19 Silicon (Si)-Total 0.00018 0.000018 mg/L 0.4 20 27-SEP-19 Silicon (Si)-Total 0	MET-T-CCMS-VA	Water							
Barium (Ba)-Total 0.00104 0.00100 mg/L 4.2 20 27-SEP-19	Batch R4848770								
Beryllium (Be)-Total				0.00100		mg/L	4.2	20	27-SEP-19
Bismuth (B)-Total	Barium (Ba)-Total		0.0711	0.0690		mg/L	3.1	20	27-SEP-19
Boron (B)-Total <0.010	Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cadmium (Cd)-Total 0.0000136 0.0000152 mg/L 11 20 27-SEP-19 Calcium (Ca)-Total 103 105 mg/L 1.9 20 27-SEP-19 Cesium (Cs)-Total 0.000063 0.000062 mg/L 0.7 20 27-SEP-19 Chromium (Cr)-Total 0.00069 0.00262 mg/L 2.7 20 27-SEP-19 Cobalt (Co)-Total 0.00072 0.00072 mg/L 0.2 20 27-SEP-19 Copper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 0.0652 0.0655 mg/L 1.6 20 27-SEP-19 Molydenum (Mo)-Total 0.0562 0.0655 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L	Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Calcium (Ca)-Total 103 105 mg/L 1.9 20 27-SEP-19 Cesium (Cs)-Total 0.00063 0.00062 mg/L 0.7 20 27-SEP-19 Chromium (Cr)-Total 0.00269 0.00262 mg/L 2.7 20 27-SEP-19 Chromium (Cr)-Total 0.00272 0.00072 mg/L 0.2 20 27-SEP-19 Cobalt (Co)-Total 0.00072 0.00072 mg/L 0.2 20 27-SEP-19 Coper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 0.0562 0.0655 mg/L 1.5 20 27-SEP-19 Molydenum (Mo)-Total 0.00644 0.00928 mg/L 3.7 20 27-SEP-19 Molydenum (Mo)-Total 0.00644 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.0105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Selenium (Ks)-Total 0.00184 0.00199 mg/L 5.1 20 27-SEP-19 Selenium (Ks)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Selenium (Sp)-Total 0.00033 0.00030 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.00033 0.00030 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.00033 0.00030 mg/L 7.0 20 27-SEP-19 Silicon (Si)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Silicon (Si)-Total 0.00003 0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Thorium (Ti)-Total 0.00018 0.00018 mg/L N/A 20 27-SEP-19 Tho	Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cesium (Cs)-Total 0.000063 0.000062 mg/L 0.7 20 27-SEP-19 Chromium (Cr)-Total 0.00269 0.00262 mg/L 2.7 20 27-SEP-19 Cobalt (Co)-Total 0.00072 0.00072 mg/L 0.2 20 27-SEP-19 Copper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lead (Pb)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 2.6.8 26.8 mg/L 0.3 20 27-SEP-19 Molybdenum (Mo)-Total 0.0562 0.0655 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.0094 0.00928 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L	Cadmium (Cd)-Total		0.0000136	0.0000152		mg/L	11	20	27-SEP-19
Chromium (Cr)-Total 0.00269 0.00262 mg/L 2.7 20 27-SEP-19 Cobalt (Co)-Total 0.00072 0.00072 mg/L 0.2 20 27-SEP-19 Copper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 2.6.8 26.8 mg/L 0.3 20 27-SEP-19 Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L	Calcium (Ca)-Total		103	105		mg/L	1.9	20	27-SEP-19
Cobalt (Co)-Total 0.00072 0.00072 mg/L 0.2 20 27-SEP-19 Copper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 26.8 26.8 mg/L 0.3 20 27-SEP-19 Molybdenum (Mo)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Mickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 0.20 2.23 mg/L	Cesium (Cs)-Total		0.000063	0.000062		mg/L	0.7	20	27-SEP-19
Copper (Cu)-Total 0.0104 0.0109 mg/L 4.8 20 27-SEP-19 Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19 Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 26.8 26.8 26.8 mg/L 0.3 20 27-SEP-19 Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00652 0.0655 mg/L 3.7 20 27-SEP-19 Mickel (Ni)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.166 0.202 mg/L 3.3 20 27-SEP-19 Rubidium (Rb)-Total 0.0130 0.00123	Chromium (Cr)-Total		0.00269	0.00262		mg/L	2.7	20	27-SEP-19
Iron (Fe)-Total 2.98 2.96 mg/L 0.8 20 27-SEP-19	Cobalt (Co)-Total		0.00072	0.00072		mg/L	0.2	20	27-SEP-19
Lead (Pb)-Total 0.000543 0.000513 mg/L 5.6 20 27-SEP-19 Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 26.8 26.8 mg/L 0.3 20 27-SEP-19 Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L	Copper (Cu)-Total		0.0104	0.0109		mg/L	4.8	20	27-SEP-19
Lithium (Li)-Total 0.0029 0.0029 mg/L 1.6 20 27-SEP-19 Magnesium (Mg)-Total 26.8 26.8 mg/L 0.3 20 27-SEP-19 Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg	Iron (Fe)-Total		2.98	2.96		mg/L	0.8	20	27-SEP-19
Magnesium (Mg)-Total 26.8 26.8 mg/L 0.3 20 27-SEP-19 Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 7.8 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silver (Ag)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000033	Lead (Pb)-Total		0.000543	0.000513		mg/L	5.6	20	27-SEP-19
Manganese (Mn)-Total 0.0562 0.0655 mg/L 15 20 27-SEP-19 Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Sturbuir (Sr)-Total 0.360 0.365 mg/L </td <td>Lithium (Li)-Total</td> <td></td> <td>0.0029</td> <td>0.0029</td> <td></td> <td>mg/L</td> <td>1.6</td> <td>20</td> <td>27-SEP-19</td>	Lithium (Li)-Total		0.0029	0.0029		mg/L	1.6	20	27-SEP-19
Molybdenum (Mo)-Total 0.00894 0.00928 mg/L 3.7 20 27-SEP-19 Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L	Magnesium (Mg)-Total		26.8	26.8		mg/L	0.3	20	27-SEP-19
Nickel (Ni)-Total 0.00105 0.00102 mg/L 3.0 20 27-SEP-19 Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 1.4 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Manganese (Mn)-Total		0.0562	0.0655		mg/L	15	20	27-SEP-19
Phosphorus (P)-Total 0.186 0.202 mg/L 8.3 20 27-SEP-19 Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 1.3 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Molybdenum (Mo)-Total		0.00894	0.00928		mg/L	3.7	20	27-SEP-19
Potassium (K)-Total 2.20 2.23 mg/L 1.4 20 27-SEP-19 Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 1.3 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Nickel (Ni)-Total		0.00105	0.00102		mg/L	3.0	20	27-SEP-19
Rubidium (Rb)-Total 0.00130 0.00123 mg/L 5.1 20 27-SEP-19 Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Phosphorus (P)-Total		0.186	0.202		mg/L	8.3	20	27-SEP-19
Selenium (Se)-Total 0.00184 0.00199 mg/L 7.8 20 27-SEP-19 Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Potassium (K)-Total		2.20	2.23		mg/L	1.4	20	27-SEP-19
Silicon (Si)-Total 10.4 10.5 mg/L 0.8 20 27-SEP-19 Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Rubidium (Rb)-Total		0.00130	0.00123		mg/L	5.1	20	27-SEP-19
Silver (Ag)-Total 0.000033 0.000030 mg/L 7.0 20 27-SEP-19 Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Selenium (Se)-Total		0.00184	0.00199		mg/L	7.8	20	27-SEP-19
Sodium (Na)-Total 12.1 12.2 mg/L 0.4 20 27-SEP-19 Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Silicon (Si)-Total		10.4	10.5		mg/L	0.8	20	27-SEP-19
Strontium (Sr)-Total 0.360 0.365 mg/L 1.3 20 27-SEP-19 Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Silver (Ag)-Total		0.000033	0.000030		mg/L	7.0	20	27-SEP-19
Sulfur (S)-Total 47.5 48.8 mg/L 2.9 20 27-SEP-19 Tellurium (Te)-Total <0.00020	Sodium (Na)-Total		12.1	12.2		mg/L	0.4	20	27-SEP-19
Tellurium (Te)-Total <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Thallium (Tl)-Total <0.000010	Strontium (Sr)-Total		0.360	0.365		mg/L	1.3	20	27-SEP-19
Thallium (TI)-Total <0.000010 <0.000010 RPD-NA mg/L N/A 20 27-SEP-19 Thorium (Th)-Total 0.00018 0.00018 mg/L 3.0 20 27-SEP-19 Tin (Sn)-Total <0.00010	Sulfur (S)-Total		47.5	48.8		mg/L	2.9	20	27-SEP-19
Thorium (Th)-Total 0.00018 0.00018 mg/L 3.0 20 27-SEP-19 Tin (Sn)-Total <0.00010	Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Tin (Sn)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Titanium (Ti)-Total 0.0830 0.0823 mg/L 0.8 20 27-SEP-19	Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-SEP-19
Titanium (Ti)-Total 0.0830 0.0823 mg/L 0.8 20 27-SEP-19	Thorium (Th)-Total		0.00018	0.00018		mg/L	3.0	20	27-SEP-19
	Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Tungsten (W)-Total 0.00064 0.00048 mg/L 27-SEP-19	Titanium (Ti)-Total		0.0830	0.0823		mg/L	0.8	20	27-SEP-19
	Tungsten (W)-Total		0.00064	0.00048		mg/L			27-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4848770								
WG3173572-3 DUP Tungsten (W)-Total		L2353204-1 0.00064	0.00048	J	mg/L	0.00016	0.0002	27-SEP-19
Uranium (U)-Total		0.0246	0.0242		mg/L	1.7	20	27-SEP-19
Vanadium (V)-Total		0.00862	0.00856		mg/L	0.6	20	27-SEP-19
Zinc (Zn)-Total		0.0039	0.0045		mg/L	15	20	27-SEP-19
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
NH3-F-VA	Water							
Batch R4842769								
WG3173063-3 DUP Ammonia, Total (as N)		L2353299-1 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	26-SEP-19
WG3173063-2 LCS Ammonia, Total (as N)			100.5		%		85-115	26-SEP-19
WG3173063-1 MB Ammonia, Total (as N)			0.0448	В	mg/L		0.005	26-SEP-19
WG3173063-4 MS Ammonia, Total (as N)		L2353302-1	96.6		%		75-125	26-SEP-19
Batch R4849527								
WG3174066-3 DUP Ammonia, Total (as N)		L2353609-1 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174066-2 LCS Ammonia, Total (as N)			103.4		%		85-115	27-SEP-19
WG3174066-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	27-SEP-19
WG3174066-4 MS		L2353609-2			3			
Ammonia, Total (as N)			89.9		%		75-125	27-SEP-19
NO2-L-IC-N-VA	Water							
Batch R4841214								
WG3172945-2 LCS Nitrite (as N)			101.2		%		90-110	25-SEP-19
WG3172945-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	25-SEP-19
WG3172945-4 MS Nitrite (as N)		L2353611-2	96.0		%		75-125	25-SEP-19
Batch R4847748								
WG3174448-3 DUP Nitrite (as N)		L2353611-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-SEP-19
WG3174448-2 LCS								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-VA	Water							
Batch R484774 WG3174448-2 LCS Nitrite (as N)	8		100.2		%		90-110	26-SEP-19
WG3174448-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	26-SEP-19
WG3174448-4 MS Nitrite (as N)		L2354987-6	100.1		%		75-125	26-SEP-19
NO3-L-IC-N-VA	Water							
Batch R484121	4							
WG3172945-2 LCS Nitrate (as N)			108.3		%		90-110	25-SEP-19
WG3172945-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	25-SEP-19
WG3172945-4 MS Nitrate (as N)		L2353611-2	103.8		%		75-125	25-SEP-19
Batch R484774 WG3174448-3 DUP Nitrate (as N)		L2353611-1 0.0108	0.0109		mg/L	1.0	20	26-SEP-19
WG3174448-2 LCS Nitrate (as N)			105.9		%		90-110	26-SEP-19
WG3174448-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	26-SEP-19
WG3174448-4 MS Nitrate (as N)		L2354987-6	105.6		%		75-125	26-SEP-19
PH-PCT-VA	Water							
Batch R484373 WG3172940-2 CRM pH		VA-PH7-BUF	7.01		рН		6.9-7.1	25-SEP-19
WG3172940-4 DUP pH		L2353758-3 7.36	7.29	J	рН	0.07	0.3	25-SEP-19
Batch R484833	0							
WG3174443-2 CRM pH		VA-PH7-BUF	7.02		рН		6.9-7.1	26-SEP-19
WG3174443-4 DUP pH		L2354648-1 8.03	8.03	J	рН	0.00	0.3	26-SEP-19
SO4-IC-N-VA	Water							



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-VA		Water							
Batch R48 WG3172945-3 Sulfate (SO4)	341214 DUP		L2353412-1 9070	9200		mg/L	1.4	20	25-SEP-19
WG3172945-2 Sulfate (SO4)	LCS			109.1		%		90-110	25-SEP-19
WG3172945-1 Sulfate (SO4)	МВ			<0.30		mg/L		0.3	25-SEP-19
WG3172945-4 Sulfate (SO4)	MS		L2353611-2	105.7		%		75-125	25-SEP-19
Batch R48	347748								
WG3174448-3 Sulfate (SO4)	DUP		L2353611-1 5.77	5.74		mg/L	0.5	20	26-SEP-19
WG3174448-2 Sulfate (SO4)	LCS			105.5		%		90-110	26-SEP-19
WG3174448-1 Sulfate (SO4)	MB			<0.30		mg/L		0.3	26-SEP-19
WG3174448-4 Sulfate (SO4)	MS		L2354987-6	105.2		%		75-125	26-SEP-19
TDS-VA		Water							
Batch R48	351422								
WG3176211-6 Total Dissolved S	DUP Solids		L2353609-4 115	109		mg/L	5.7	20	30-SEP-19
WG3176211-5 Total Dissolved S	LCS Solids			101.6		%		85-115	30-SEP-19
WG3176211-4 Total Dissolved S	MB Solids			<10		mg/L		10	30-SEP-19

Workorder: L2353611 Report Date: 02-OCT-19

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Contact: Airesse MacPhee

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
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
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.

Workorder: L2353611 Report Date: 02-OCT-19

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#400 - 179 Colonnade Road

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Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	23-SEP-19 12:20	26-SEP-19 19:45	0.25	79	hours	EHTR-FM
	2	23-SEP-19 12:30	25-SEP-19 10:02	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2353611 were received on 25-SEP-19 08:45.

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 predetermined 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 L2353611-COFC

COC Number: 17 -

Environmental

Canada Toll Free: 1 800 668 9878

	www.alsglobal.com		Λ.								!									_	
Report To	Contact and company name below will appear on the final report		Report Format	/ Distribution			Select	Service	Level	Below	- Conta	ct you	r AM to	o confi	irm all	E&P TA	\Ts (su	rcharge	s may a	apply)	
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Contact:	Airesse MacPhee	Quality Control	(QC) Report with R	eport ☑ YES	□ NO	Y (Mark)	4 day	[P4-20	%] []	NCY	1 Bu	sines	s day	[E1 -	100%]					
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Street:	455 Phillip Street	Email 1 or Fax	airesse.macphee@	ghd.com			rate and	Time Re	quired	for all E	&P TAT	s:				dd-mm	nn-yy	hh:mm			
City/Province:	Waterloo, ON	Email 2	Laurie.Clark@ghd	com, Natasha.T	mco.brlg@hu	For this	is that c	an not be p	erforme	d accord	ing to the	service	level se	alected.	you will	be contac	cted.]
Postal Code:	N2L 3X2	Email 3	Michaela Пуск@g	hd.com,Lainey.K	ang@ghd com							Ana	alysis	Requ	est						
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(lab use only)	(This description will appear on the report)		(dd-mmm-yy)	(chimm)	Sample Type	Ą	An ons (Cl,	E 1) E	<u> </u>	🚆	Tots					- 1	İ	SAL	San	NUMBER
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Are samples for	human consumption/ use?						IN!	ITIAL CO	OLER T	EMPER	ATURES	3 °C			FI	NAL CO	OLER T	EMPERA	URES	°C	
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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

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 26-SEP-19

Report Date: 10-OCT-19 18:08 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2354648Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River GW

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2354648 CONTD....

PAGE 2 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354648-1 WG-56484-230919-NT-18 Sampled By: N. Turl on 23-SEP-19 @ 17:50 Matrix: GW							
Physical Tests							
Conductivity	100		2.0	uS/cm		26-SEP-19	R4848330
Hardness (as CaCO3)	47.0		0.50	mg/L		27-SEP-19	
pH	8.03		0.10	pН		26-SEP-19	R4848330
Total Dissolved Solids	72		13	mg/L		01-OCT-19	R4856489
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	53.9		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Total (as CaCO3)	53.9		1.0	mg/L		26-SEP-19	R4848330
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		27-SEP-19	R4847733
Chloride (CI)	1.12		0.50	mg/L		27-SEP-19	R4849256
Fluoride (F)	<0.020		0.020	mg/L		27-SEP-19	R4849256
Nitrate and Nitrite (as N)	0.142		0.0051	mg/L		30-SEP-19	
Nitrate (as N)	0.142		0.0050	mg/L		27-SEP-19	R4849256
Nitrite (as N)	<0.0010		0.0010	mg/L		27-SEP-19	R4849256
Sulfate (SO4)	2.58		0.30	mg/L		27-SEP-19	R4849256
Dissolved Metals				3			
Dissolved Mercury Filtration Location	FIELD					28-SEP-19	R4849604
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4846252
Aluminum (AI)-Dissolved	0.0045		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Arsenic (As)-Dissolved	0.00034		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Barium (Ba)-Dissolved	0.00066		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Calcium (Ca)-Dissolved	16.0		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Chromium (Cr)-Dissolved	0.00027		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Copper (Cu)-Dissolved	0.00073		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Magnesium (Mg)-Dissolved	1.70		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Manganese (Mn)-Dissolved	<0.00010		0.0000	mg/L	26-SEP-19	27-SEP-19	R4849021
Mercury (Hg)-Dissolved	<0.000000		0.000000	mg/L	28-SEP-19	28-SEP-19	R4849556
Molybdenum (Mo)-Dissolved	0.000134		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Nickel (Ni)-Dissolved			0.00050	mg/L	26-SEP-19	27-SEP-19	R4849021
` '	<0.00050			_			
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021

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

L2354648 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354648-1 WG-56484-230919-NT-18 Sampled By: N. Turl on 23-SEP-19 @ 17:50 Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	0.211		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Selenium (Se)-Dissolved	0.000094		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Silicon (Si)-Dissolved	3.79		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Sodium (Na)-Dissolved	1.27		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Strontium (Sr)-Dissolved	0.0243		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Sulfur (S)-Dissolved	0.52		0.50	mg/L	26-SEP-19	27-SEP-19	R4849021
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	26-SEP-19	27-SEP-19	R4849021
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Uranium (U)-Dissolved	0.000023		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Vanadium (V)-Dissolved	0.00270		0.00050	mg/L	26-SEP-19	27-SEP-19	R4849021
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
L2354648-2 WG-56484-230919-NT-19 Sampled By: N. Turl on 23-SEP-19 @ 18:20 Matrix: GW							
Physical Tests							
Conductivity	600		2.0	uS/cm		26-SEP-19	R4848330
Hardness (as CaCO3)	246		0.50	mg/L		27-SEP-19	
pH	7.53		0.10	рН		26-SEP-19	R4848330
Total Dissolved Solids	345		20	mg/L		01-OCT-19	R4856489
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	312		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Total (as CaCO3)	312		1.0	mg/L		26-SEP-19	R4848330
Ammonia, Total (as N)	3.66		0.050	mg/L		28-SEP-19	R4849534
Chloride (CI)	27.1		0.50	mg/L		27-SEP-19	R4849256
Fluoride (F)	<0.020		0.020	mg/L		27-SEP-19	R4849256
Nitrate and Nitrite (as N)	0.0196		0.0051	mg/L		30-SEP-19	
Nitrate (as N)	0.0094		0.0050	mg/L		27-SEP-19	R4849256
Nitrite (as N)	0.0101		0.0010	mg/L		27-SEP-19	R4849256
Sulfate (SO4)	0.83		0.30	mg/L		27-SEP-19	R4849256
Dissolved Metals	FIE: 5					00.055.45	D 40 4222
Dissolved Mercury Filtration Location	FIELD					28-SEP-19	R4849604
Dissolved Metals Filtration Location	FIELD		0.0040	n	00 055 40	26-SEP-19	R4846252
Aluminum (Al)-Dissolved	0.0024		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021

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

L2354648 CONTD.... PAGE 4 of 11

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354648-2 WG-56484-230919-NT-19 Sampled By: N. Turl on 23-SEP-19 @ 18:20							
Matrix: GW							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Arsenic (As)-Dissolved	0.00039		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Barium (Ba)-Dissolved	0.0190		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Boron (B)-Dissolved	0.115		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cadmium (Cd)-Dissolved	0.0000220		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Calcium (Ca)-Dissolved	82.8		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Cesium (Cs)-Dissolved	0.000066		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cobalt (Co)-Dissolved	0.00108		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Copper (Cu)-Dissolved	0.00194		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Iron (Fe)-Dissolved	4.89		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Lead (Pb)-Dissolved	0.000089		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Magnesium (Mg)-Dissolved	9.62		0.0050	mg/L	26-SEP-19	27-SEP-19	R4849021
Manganese (Mn)-Dissolved	3.81		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	28-SEP-19	28-SEP-19	R4849556
Molybdenum (Mo)-Dissolved	0.000281		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Nickel (Ni)-Dissolved	0.00132		0.00050	mg/L	26-SEP-19	27-SEP-19	R4849021
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Potassium (K)-Dissolved	4.78		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Rubidium (Rb)-Dissolved	0.00163		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Silicon (Si)-Dissolved	7.62		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Sodium (Na)-Dissolved	20.8		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Strontium (Sr)-Dissolved	0.244		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	26-SEP-19	27-SEP-19	R4849021
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Titanium (Ti)-Dissolved	0.00048		0.00030	mg/L	26-SEP-19	27-SEP-19	R4849021
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Uranium (U)-Dissolved	0.000050		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4849021
Zinc (Zn)-Dissolved	0.0076		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
L2354648-3 WG-56484-230919-NT-20 Sampled By: N. Turl on 23-SEP-19 @ 18:45 Matrix: GW							

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

L2354648 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354648-3 WG-56484-230919-NT-20 Sampled By: N. Turl on 23-SEP-19 @ 18:45 Matrix: GW							
Physical Tests							
Conductivity	540		2.0	uS/cm		26-SEP-19	R4848330
Hardness (as CaCO3)	262		0.50	mg/L		27-SEP-19	
Н	8.22		0.10	рH		26-SEP-19	R4848330
Total Dissolved Solids	325		20	mg/L		01-OCT-19	R4856489
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	276		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848330
Alkalinity, Total (as CaCO3)	276		1.0	mg/L		26-SEP-19	R4848330
Ammonia, Total (as N)	1.94		0.050	mg/L		28-SEP-19	R4849534
Chloride (CI)	26.5		0.50	mg/L		27-SEP-19	R4849256
Fluoride (F)	0.027		0.020	mg/L		27-SEP-19	R4849256
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		30-SEP-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		27-SEP-19	R4849256
Nitrite (as N)	<0.0010		0.0010	mg/L		27-SEP-19	R4849256
Sulfate (SO4)	2.99		0.30	mg/L		27-SEP-19	R4849256
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					28-SEP-19	R4849604
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4846252
Aluminum (Al)-Dissolved	0.0050		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Arsenic (As)-Dissolved	0.00172		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Barium (Ba)-Dissolved	0.0124		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Boron (B)-Dissolved	0.062		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cadmium (Cd)-Dissolved	0.0000234		0.0000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Calcium (Ca)-Dissolved	89.4		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Cobalt (Co)-Dissolved	0.00011		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Copper (Cu)-Dissolved	0.00031		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Iron (Fe)-Dissolved	0.363		0.010	mg/L	26-SEP-19	27-SEP-19	R4849021
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4849021
Magnesium (Mg)-Dissolved	9.32		0.0050	mg/L	26-SEP-19	27-SEP-19	R4849021
Manganese (Mn)-Dissolved	1.28		0.00010	mg/L	26-SEP-19	27-SEP-19	R4849021
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	28-SEP-19	28-SEP-19	R4849556
Molybdenum (Mo)-Dissolved	0.000240		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Nickel (Ni)-Dissolved	0.00057		0.00050	mg/L	26-SEP-19	27-SEP-19	R4849021
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021

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

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L2354848-3 WG-56484-230919-NT-20 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 @ 18.45 Sampled by: N. Turi on 23-SEP-19 & 18.48 Sampled by: N. Turi on 23-SEP-1	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Potassium (K)-Dissolved 3.30	Sampled By: N. Turl on 23-SEP-19 @ 18:45							
Potassium (K)-Dissolved								
Rubidium (Rb)-Dissolved		3.30		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Selenium (Se)-Dissolved	Rubidium (Rb)-Dissolved				_	26-SEP-19	27-SEP-19	R4849021
Silver (Ag)-Dissolved	Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4849021
Sodium (Na)-Dissolved 10.1 0.050 mg/L 26-SEP-19 27-SEP-19 R4849021	Silicon (Si)-Dissolved	7.45		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Strontium (Sr)-Dissolved	Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Sulfur (S)-Dissolved	Sodium (Na)-Dissolved	10.1		0.050	mg/L	26-SEP-19	27-SEP-19	R4849021
Tellurium (Te)-Dissolved	Strontium (Sr)-Dissolved	0.206		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Thallium (TI)-Dissolved	Sulfur (S)-Dissolved	0.86		0.50	mg/L	26-SEP-19	27-SEP-19	R4849021
Thorium (Th)-Dissolved	Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4849021
Tin (Sn)-Dissolved		<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4849021
Titanium (Ti)-Dissolved col.00030 mg/L 26-SEP-19 27-SEP-19 R4849021 Tungsten (Wy-Dissolved col.00010 col.00010 col.00010 mg/L 26-SEP-19 27-SEP-19 R4849021 Zinc (Zh)-Dissolved col.00020								

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

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	tracted Analyzed	
L2354648-3 WG-56484-230919-NT-20 Sampled By: N. Turl on 23-SEP-19 @ 18:45 Matrix: GW						
Volatile Organic Compounds						
1,3-Dichloropropene (cis & trans)	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Ethylbenzene	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Methyl t-butyl ether (MTBE)	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Styrene	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1,2-Tetrachloroethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1,2,2-Tetrachloroethane	<0.00020	0.00020	mg/L	01-OCT-19	03-OCT-19	R4851265
Tetrachloroethylene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Toluene	<0.00045	0.00045	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1-Trichloroethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1,2-Trichloroethane	<0.00050	0.00050	mg/L	01-OCT-19	03-OCT-19	R4851265
Trichloroethylene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Trichlorofluoromethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Vinyl Chloride	<0.00040	0.00040	mg/L	01-OCT-19	03-OCT-19	R4851265
ortho-Xylene	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
meta- & para-Xylene	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Xylenes	<0.00075	0.00075	mg/L		02-OCT-19	
Surrogate: 4-Bromofluorobenzene (SS)	108.8	70-130	%		01-OCT-19	R4821270
Surrogate: 1,4-Difluorobenzene (SS)	106.8	70-130	%		01-OCT-19	R4821270
Hydrocarbons						
Volatile Hydrocarbons (VH6-10)	<0.10	0.10	mg/L	01-OCT-19	03-OCT-19	R4824470
VPH (C6-C10)	<0.10	0.10	mg/L		03-OCT-19	
Surrogate: 3,4-Dichlorotoluene (SS)	85.2	70-130	%		03-OCT-19	R4824470
L2354648-4 WG-56484-230919-NT-21 Sampled By: N. Turl on 23-SEP-19 @ 19:00 Matrix: GW						
Volatile Organic Compounds						
Benzene	<0.00050	0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Bromodichloromethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Bromoform	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Carbon Tetrachloride	<0.00050	0.00050	mg/L	01-OCT-19	03-OCT-19	R4851265
Chlorobenzene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Dibromochloromethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Chloroethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Chloroform	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Chloromethane	<0.0050	0.0050	mg/L	01-OCT-19	03-OCT-19	R4851265
1,2-Dichlorobenzene	<0.00050	0.00050		01-OCT-19	03-OCT-19	R4851265
1,3-Dichlorobenzene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,4-Dichlorobenzene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1-Dichloroethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,2-Dichloroethane	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1-Dichloroethylene	<0.0010	0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1-Dichloroethylene	<0.0010	0.0010	mg/L	01-OCT-19	04-OCT-19	R4851265

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354648-4 WG-56484-230919-NT-21 Sampled By: N. Turl on 23-SEP-19 @ 19:00 Matrix: GW							
Volatile Organic Compounds							
cis-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
trans-1,2-Dichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Dichloromethane	<0.0050		0.0050	mg/L	01-OCT-19	03-OCT-19	R4851265
1,2-Dichloropropane	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
cis-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	03-OCT-19	R4851265
trans-1,3-Dichloropropylene	<0.00050		0.00050	mg/L	01-OCT-19	03-OCT-19	R4851265
1,3-Dichloropropene (cis & trans)	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Ethylbenzene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Methyl t-butyl ether (MTBE)	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Styrene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1,2-Tetrachloroethane	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1,2,2-Tetrachloroethane	<0.00020		0.00020	mg/L	01-OCT-19	03-OCT-19	R4851265
Tetrachloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Toluene	<0.00045		0.00045	mg/L	01-OCT-19	01-OCT-19	R4821270
1,1,1-Trichloroethane	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L	01-OCT-19	03-OCT-19	R4851265
Trichloroethylene	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Trichlorofluoromethane	<0.0010		0.0010	mg/L	01-OCT-19	03-OCT-19	R4851265
Vinyl Chloride	<0.00040		0.00040	mg/L	01-OCT-19	03-OCT-19	R4851265
ortho-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
meta- & para-Xylene	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4821270
Xylenes	<0.00075		0.00075	mg/L		02-OCT-19	
Surrogate: 4-Bromofluorobenzene (SS)	92.2		70-130	%		01-OCT-19	R4821270
Surrogate: 1,4-Difluorobenzene (SS)	109.6		70-130	%		01-OCT-19	R4821270
Hydrocarbons	0.40		0.40		04 007 40	00 OOT 40	D 400 4 470
Volatile Hydrocarbons (VH6-10)	<0.10		0.10	mg/L	01-OCT-19	03-OCT-19	R4824470
VPH (C6-C10)	<0.10	CURD NO	0.10	mg/L		03-OCT-19	D 400 4 470
Surrogate: 3,4-Dichlorotoluene (SS)	68.3	SURR-ND	70-130	%		03-OCT-19	R4824470

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Chloromethane	LCS-ND	L2354648-3, -4
Laboratory Control Sample	Vinyl Chloride	LCS-ND	L2354648-3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2354648-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2354648-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

ALK-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a

pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Calambeten Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity where negative during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FUELS-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents, GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved Swith hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), pleaseMed with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

056484-52

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NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedires interpreted 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.

VH-HSFID-VA VH in Water by Headspace GCFID BC Env. Lab Manual (VH in Water) Water

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Compounds eluting between n-hexane and n-decane are measured and summed together using flame-ionization detection.

VH-SURR-FID-VA BC Env. Lab Manual (VH in Solids) Water VH Surrogates for Waters

VOC-HSMS-VA Water VOCs in water by Headspace EPA 5021A/8260C

The water sample, with added reagents GENE ted in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

Miscellaneous VOCs in Water by VOC-M-HSMS-VA Water EPA 5021A/8260C

Water samples, with reagents, are heat & CMS an aliquot of the headspace at equilibrium is analysed by GC-MS.

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace EPA 5021A/8260C

The water sample, with added reagents GSMS ated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for EPA 5035A/5021A/8260C

VPH is VH minus select aromatics VPH-CALC-VA Water BC MOE VPH

VPHw measures Volatile Petroleum Hydrocarbons in water. Results are calculated by subtraction of specific Monocyclic Aromatic Hydrocarbons from

VH6-10, as per the BC Lab Manual VPH calculation procedure.

VPHw = VH6-10 minus Benzene, Toluene, Ethylbenzene, Xylenes, and Styrene

XYLENES-CALC-VA Sum of Xylene Isomer CALCULATION Water

Calculation of Total Xylenes Concentrations

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The

DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** 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

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

056484-52 L2354648 CONTD....

Reference Information

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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.



Workorder: L2354648 Report Date: 10-OCT-19 Page 1 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA		Water							
Batch R4	848330								
WG3174443-4 Alkalinity, Total	DUP (as CaCC	D3)	L2354648-1 53.9	54.0		mg/L	0.2	20	26-SEP-19
WG3174443-3 Alkalinity, Total	LCS (as CaCC	03)		109.6		%		85-115	26-SEP-19
WG3174443-1 Alkalinity, Total	MB (as CaCC	D3)		<1.0		mg/L		1	26-SEP-19
CL-IC-N-VA		Water							
Batch R4	849256								
WG3174499-3	DUP		L2354648-1						
Chloride (CI)			1.12	1.14		mg/L	1.1	20	27-SEP-19
WG3174499-2 Chloride (CI)	LCS			103.9		%		90-110	27-SEP-19
WG3174499-1 Chloride (Cl)	MB			<0.50		mg/L		0.5	27-SEP-19
WG3174499-4 Chloride (CI)	MS		L2354653-2	103.4		%		75-125	27-SEP-19
EC-PCT-VA		Water							
Batch R4	848330								
WG3174443-4 Conductivity	DUP		L2354648-1 100	101		uS/cm	0.3	10	26-SEP-19
WG3174443-3 Conductivity	LCS			103.0		%		90-110	26-SEP-19
WG3174443-1 Conductivity	MB			<2.0		uS/cm		2	26-SEP-19
F-IC-N-VA		Water							
Batch R4	849256								
WG3174499-3 Fluoride (F)	DUP		L2354648-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174499-2 Fluoride (F)	LCS			97.9		%		90-110	27-SEP-19
WG3174499-1 Fluoride (F)	MB			<0.020		mg/L		0.02	27-SEP-19
WG3174499-4 Fluoride (F)	MS		L2354653-2	97.4		%		75-125	27-SEP-19
HG-D-CVAA-VA		Water							



Workorder: L2354648 Report Date: 10-OCT-19 Page 2 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Hg-D-CVAA-VA	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Mercury (Hg)-Dissolved	HG-D-CVAA-VA	Water							
MG3175884-10 LCS Mcrury (Hg)-Dissolved 103.8 % 100.00005 28-SEP-19 WG3175884-9 MB Mcrury (Hg)-Dissolved 20.000005 mg/L 0.000005 28-SEP-19 WG3175884-9 MB Mcrury (Hg)-Dissolved L2354524-2 104.4 % 70-100 28-SEP-19 MET-D-CCMS-VA Water L2354524-2 104.4 % MCT-D-CMS-VA Value Batch MG3174242-3 DUP ALIMINUM (MJ-Dissolved L2353692-21 ALIMINUM (MJ-Dissolved 0.00000 RPD-NA mg/L N/A 20 27-SEP-19 Aliminum (MJ-Dissolved -0.00010 -0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Arsenic (As)-Dissolved -0.00010 -0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Bismuti (Bi)-Dissolved -0.00010 -0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Born (B)-Dissolved -0.000000 -0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Cadmium (Cd)-Dissolved -0.000000 -0.00010 RPD-NA </td <td>Batch R4849556</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Batch R4849556								
Marcury (Hg)-Dissolved L2354524-2 Marcury (Hg)-Dissolved L2354524-2 Marcury (Hg)-Dissolved L2354524-2 Marcury (Hg)-Dissolved Marc				<0.0000050	RPD-NA	mg/L	N/A	20	28-SEP-19
WG3175849-9 MB Mercury (Hg)-Dissolved <0.000005€ mg/L 0.000005 28-SEP-19 WG3175849-12 MS Mercury (Hg)-Dissolved L2354524-2 104.4 % 70-130 28-SEP-19 MET-D-CCMS-VA Water Batch R449021 WG3174242-3 DUP (2422-3 DUP) Aluminum (Al)-Dissolved L2353692-21 AUMINITATION (Al)-DISSOLVED N/A 20 27-SEP-19 Ansenic (As)-Dissolved <0.00010				103.8		%		80-120	28-SED-10
WG3175849-12 MS Mercury (Hg)-Dissolved L2354524-2 104.4 % 70-130 28-SEP-19 MET-D-CCMS-VA Water September 19 Batch R4849021 WG3174242-3 DUP Aluminum (Al)-Dissolved L2353692-21 NA 20 27-SEP-19 Aluminum (Al)-Dissolved <0.0030	WG3175849-9 MB							00-120	20-021 -19
MET-D-CCMS-VA Water Batch R4849021 Valuable Val	Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-19
Magnesium (A)-Dissolved			L2354524-2	104.4		%		70-130	28-SEP-19
Aluminum (Al)-Dissolved	MET-D-CCMS-VA	Water							
Aluminum (Al)-Dissolved <0.0030 <0.0030 RPD-NA mg/L N/A 20 27-SEP-19 Antimony (Sb)-Dissolved <0.00010	Batch R4849021								
Arsenic (As)-Dissolved		Ė		<0.0030	RPD-NA	mg/L	N/A	20	27-SEP-19
Beryllium (Be)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Bismuth (Bi)-Dissolved <0.000050	Antimony (Sb)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Bismuth (Bi)-Dissolved	Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Boron (B)-Dissolved <0.010 <0.010 RPD-NA mg/L N/A 20 27-SEP-19 Cadmium (Cd)-Dissolved <0.0000050	Beryllium (Be)-Dissolved	i	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cadmium (Cd)-Dissolved <0.0000050 <0.000005C RPD-NA mg/L N/A 20 27-SEP-19 Calcium (Ca)-Dissolved <0.050	Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Calcium (Ca)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-SEP-19 Cesium (Cs)-Dissolved <0.000010	Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-SEP-19
Cesium (Cs)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 27-SEP-19 Chromium (Cr)-Dissolved <0.00010	Cadmium (Cd)-Dissolve	d	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Chromium (Cr)-Dissolved	Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-SEP-19
Cobalt (Co)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-SEP-19 Copper (Cu)-Dissolved <0.00020	Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-SEP-19
Copper (Cu)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-SEP-19 Iron (Fe)-Dissolved <0.010	Chromium (Cr)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Iron (Fe)-Dissolved <0.010 <0.010 RPD-NA mg/L N/A 20 27-SEP-19 Lithium (Li)-Dissolved <0.0010	Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Lithium (Li)-Dissolved <0.0010	Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Magnesium (Mg)-Dissolved <0.10 <0.10 RPD-NA mg/L N/A 20 27-SEP-19 Molybdenum (Mo)-Dissolved <0.000050	Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-SEP-19
Molybdenum (Mo)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-SEP-19 Nickel (Ni)-Dissolved <0.00050	Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-19
Nickel (Ni)-Dissolved <0.00050 <0.00050 RPD-NA mg/L N/A 20 27-SEP-19 Phosphorus (P)-Dissolved <0.050	Magnesium (Mg)-Dissol	ved	<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-SEP-19
Phosphorus (P)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-SEP-19 Potassium (K)-Dissolved <0.050	Molybdenum (Mo)-Disso	olved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Potassium (K)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-SEP-19 Rubidium (Rb)-Dissolved <0.00020	Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-SEP-19
Rubidium (Rb)-Dissolved <0.00020	Phosphorus (P)-Dissolve	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-SEP-19
Selenium (Se)-Dissolved <0.000050	Potassium (K)-Dissolved	d	<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-SEP-19
Silicon (Si)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-SEP-19 Silver (Ag)-Dissolved <0.000010	Rubidium (Rb)-Dissolve	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Silver (Ag)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 27-SEP-19	Selenium (Se)-Dissolved	t	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
	Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-SEP-19
Sodium (Na)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-SEP-19	Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-SEP-19
	Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-SEP-19



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MET-D-CCMS-VA Batch R4849021 WG3174242-3 DUP Strontium (Sr)-Dissolved	Water							
WG3174242-3 DUP								
Strontium (Sr)-Dissolved		L2353692-21	.0.00000	DDD 114	m a/l	21/2	00	
Cultur (C) Dissolved	1	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-SEP-19
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
Thallium (TI)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-SEP-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-SEP-19
Tungsten (W)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-SEP-19
Vanadium (V)-Dissolved	I	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-SEP-19
Zirconium (Zr)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174242-2 LCS			400.0		0/			
Aluminum (Al)-Dissolved			100.3		%		80-120	27-SEP-19
Antimony (Sb)-Dissolved	a		93.5		%		80-120	27-SEP-19
Arsenic (As)-Dissolved			95.9		%		80-120	27-SEP-19
Barium (Ba)-Dissolved			97.8		%		80-120	27-SEP-19
Beryllium (Be)-Dissolved			96.6		%		80-120	27-SEP-19
Bismuth (Bi)-Dissolved			99.1		%		80-120	27-SEP-19
Boron (B)-Dissolved			92.3		%		80-120	27-SEP-19
Cadmium (Cd)-Dissolve	d		99.3		%		80-120	27-SEP-19
Calcium (Ca)-Dissolved			97.2		%		80-120	27-SEP-19
Cesium (Cs)-Dissolved			91.7		%		80-120	27-SEP-19
Chromium (Cr)-Dissolve	ed		99.2		%		80-120	27-SEP-19
Cobalt (Co)-Dissolved			98.9		%		80-120	27-SEP-19
Copper (Cu)-Dissolved			97.3		%		80-120	27-SEP-19
Iron (Fe)-Dissolved			101.2		%		80-120	27-SEP-19
Lead (Pb)-Dissolved			96.4		%		80-120	27-SEP-19
Lithium (Li)-Dissolved			98.3		%		80-120	27-SEP-19
Magnesium (Mg)-Dissol			103.8		%		80-120	27-SEP-19
Manganese (Mn)-Dissol			101.1		%		80-120	27-SEP-19
Molybdenum (Mo)-Disso	oived		98.4		%		80-120	27-SEP-19
Nickel (Ni)-Dissolved			100.8		%		80-120	27-SEP-19
Phosphorus (P)-Dissolve	ed		102.6		%		70-130	27-SEP-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4849021								
WG3174242-2 LCS Potassium (K)-Dissolve	.d		99.9		%		00.400	07.0FD 40
Rubidium (Rb)-Dissolve			99.9		%		80-120	27-SEP-19
			101.3		%		80-120	27-SEP-19
Selenium (Se)-Dissolved	eu		101.3		%		80-120	27-SEP-19
Silver (Ag) Dissolved			94.8		%		60-140	27-SEP-19
Silver (Ag)-Dissolved					%		80-120	27-SEP-19
Sodium (Na)-Dissolved			101.8				80-120	27-SEP-19
Strontium (Sr)-Dissolve	u		91.9		%		80-120	27-SEP-19
Sulfur (S)-Dissolved			98.2		%		80-120	27-SEP-19
Tellurium (Te)-Dissolve			94.0		%		80-120	27-SEP-19
Thallium (TI)-Dissolved			97.4		%		80-120	27-SEP-19
Thorium (Th)-Dissolved	1		86.9		%		80-120	27-SEP-19
Tin (Sn)-Dissolved			95.8		%		80-120	27-SEP-19
Titanium (Ti)-Dissolved			93.0		%		80-120	27-SEP-19
Tungsten (W)-Dissolve	đ		97.2		%		80-120	27-SEP-19
Uranium (U)-Dissolved			93.7		%		80-120	27-SEP-19
Vanadium (V)-Dissolve	d		101.8		%		80-120	27-SEP-19
Zinc (Zn)-Dissolved			101.4		%		80-120	27-SEP-19
Zirconium (Zr)-Dissolve	ed		93.9		%		80-120	27-SEP-19
WG3174242-1 MB Aluminum (Al)-Dissolve	d		<0.0010		mg/L		0.001	07.050.40
Antimony (Sb)-Dissolve			<0.0010		mg/L		0.001	27-SEP-19
	:u		<0.00010		•		0.0001	27-SEP-19
Arsenic (As)-Dissolved Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
` ,	4				mg/L		0.0001	27-SEP-19
Beryllium (Be)-Dissolve Bismuth (Bi)-Dissolved	u		<0.00010 <0.000050		mg/L		0.0001	27-SEP-19
Boron (B)-Dissolved			<0.010	U	mg/L mg/L		0.000	27-SEP-19
Cadmium (Cd)-Dissolve	ad		<0.00000	EC	-		0.000005	27-SEP-19
				oc.	mg/L			27-SEP-19
Calcium (Ca) Dissolved			<0.050	0	mg/L		0.05	27-SEP-19
Cesium (Cs)-Dissolved			<0.000010	U	mg/L		0.00001	27-SEP-19
Chromium (Cr)-Dissolved	eu		<0.00010		mg/L		0.0001	27-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-19
Iron (Fe)-Dissolved			<0.010	•	mg/L		0.01	27-SEP-19
Lead (Pb)-Dissolved			<0.000050	U	mg/L		0.00005	27-SEP-19



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R484902	21							
WG3174242-1 MB			<0.0010		/I		0.004	
Lithium (Li)-Dissolved					mg/L		0.001 0.005	27-SEP-19
Magnesium (Mg)-Diss			<0.0050 <0.00010		mg/L			27-SEP-19
Manganese (Mn)-Diss			<0.00010	`	mg/L		0.0001 0.00005	27-SEP-19
Molybdenum (Mo)-Dis Nickel (Ni)-Dissolved	ssorveu		<0.00050	,	mg/L		0.0005	27-SEP-19
,	hind				mg/L		0.0005	27-SEP-19
Phosphorus (P)-Disso			<0.050		mg/L			27-SEP-19
Potassium (K)-Dissolv			<0.050		mg/L		0.05	27-SEP-19
Rubidium (Rb)-Dissol			<0.00020	`	mg/L		0.0002	27-SEP-19
Selenium (Se)-Dissolved	veu		<0.000050	J	mg/L		0.00005 0.05	27-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L			27-SEP-19
Silver (Ag)-Dissolved	a.		<0.000010)	mg/L		0.00001	27-SEP-19
Sodium (Na)-Dissolve			<0.050		mg/L		0.05	27-SEP-19
Strontium (Sr)-Dissolv	/ea		<0.00020		mg/L		0.0002	27-SEP-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-SEP-19
Tellurium (Te)-Dissolv			<0.00020		mg/L		0.0002	27-SEP-19
Thallium (TI)-Dissolve			<0.000010)	mg/L		0.00001	27-SEP-19
Thorium (Th)-Dissolve	ea		<0.00010		mg/L		0.0001	27-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Titanium (Ti)-Dissolve			<0.00030		mg/L		0.0003	27-SEP-19
Tungsten (W)-Dissolv			<0.00010		mg/L		0.0001	27-SEP-19
Uranium (U)-Dissolve			<0.000010)	mg/L		0.00001	27-SEP-19
Vanadium (V)-Dissolv	red		<0.00050		mg/L		0.0005	27-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Zirconium (Zr)-Dissolv	ved		<0.00020		mg/L		0.0002	27-SEP-19
WG3174242-4 MS Aluminum (Al)-Dissolv	vod	L2353692-22	94.1		%		70.400	07.050.40
Antimony (Sb)-Dissolv			98.9		%		70-130	27-SEP-19
Arsenic (As)-Dissolve					%		70-130	27-SEP-19
` '			94.0 86.1		%		70-130	27-SEP-19
Barium (Ba)-Dissolved					%		70-130	27-SEP-19
Beryllium (Be)-Dissolve Bismuth (Bi)-Dissolve			89.6		%		70-130	27-SEP-19
` '	u		84.1				70-130	27-SEP-19
Boron (B)-Dissolved Cadmium (Cd)-Dissol	vod		84.8		%		70-130	27-SEP-19
` '			89.7 N/A	MC D	%		70-130	27-SEP-19
Calcium (Ca)-Dissolve	₽u		N/A	MS-B	%		-	27-SEP-19



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400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4849021							
WG3174242-4 MS Cesium (Cs)-Dissolved	L2353692-22	05.0		%		70.400	07.050.40
, ,		95.2 93.1		%		70-130	27-SEP-19
Chromium (Cr)-Dissolved			MOD			70-130	27-SEP-19
Cobalt (Co)-Dissolved Copper (Cu)-Dissolved		N/A 86.0	MS-B	%		-	27-SEP-19
Iron (Fe)-Dissolved		91.2		%		70-130	27-SEP-19
Lead (Pb)-Dissolved				%		70-130	27-SEP-19
,		89.7	MO D			70-130	27-SEP-19
Lithium (Li)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Magnesium (Mg)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Manganese (Mn)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Molybdenum (Mo)-Dissolved		103.7		%		70-130	27-SEP-19
Nickel (Ni)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Phosphorus (P)-Dissolved		98.2		%		70-130	27-SEP-19
Potassium (K)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Rubidium (Rb)-Dissolved		90.0		%		70-130	27-SEP-19
Selenium (Se)-Dissolved		101.7		%		70-130	27-SEP-19
Silicon (Si)-Dissolved		95.1		%		70-130	27-SEP-19
Silver (Ag)-Dissolved		94.7		%		70-130	27-SEP-19
Sodium (Na)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Strontium (Sr)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Sulfur (S)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Tellurium (Te)-Dissolved		104.0		%		70-130	27-SEP-19
Thallium (TI)-Dissolved		89.5		%		70-130	27-SEP-19
Thorium (Th)-Dissolved		95.3		%		70-130	27-SEP-19
Tin (Sn)-Dissolved		93.1		%		70-130	27-SEP-19
Titanium (Ti)-Dissolved		94.7		%		70-130	27-SEP-19
Tungsten (W)-Dissolved		99.2		%		70-130	27-SEP-19
Uranium (U)-Dissolved		N/A	MS-B	%		-	27-SEP-19
Vanadium (V)-Dissolved		95.5		%		70-130	27-SEP-19
Zinc (Zn)-Dissolved		87.6		%		70-130	27-SEP-19
Zirconium (Zr)-Dissolved		105.7		%		70-130	27-SEP-19

NH3-F-VA Water



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400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA	Water							
Batch R484773	3							
WG3174422-3 DUF Ammonia, Total (as N		L2353029-1 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174422-2 LCS Ammonia, Total (as N			98.3		%		85-115	27-SEP-19
WG3174422-1 MB Ammonia, Total (as N)		<0.0050		mg/L		0.005	27-SEP-19
WG3174422-4 MS Ammonia, Total (as N)	L2354648-1	84.4		%		75-125	27-SEP-19
NO2-L-IC-N-VA	Water							
Batch R484925	6							
WG3174499-3 DUF Nitrite (as N)	•	L2354648-1 <0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-19
WG3174499-2 LCS Nitrite (as N)			97.9		%		90-110	27-SEP-19
WG3174499-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	27-SEP-19
WG3174499-4 MS Nitrite (as N)		L2354653-2	96.9		%		75-125	27-SEP-19
NO3-L-IC-N-VA	Water							
Batch R484925	66							
WG3174499-3 DUF Nitrate (as N)	•	L2354648-1 0.142	0.145		mg/L	1.7	20	27-SEP-19
WG3174499-2 LCS Nitrate (as N)			104.0		%		90-110	27-SEP-19
WG3174499-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	27-SEP-19
WG3174499-4 MS Nitrate (as N)		L2354653-2	104.2		%		75-125	27-SEP-19
PH-PCT-VA	Water							
Batch R484833	0							
WG3174443-2 CRN pH	1	VA-PH7-BUF	7.02		рН		6.9-7.1	26-SEP-19
WG3174443-4 DUF pH	•	L2354648-1 8.03	8.03	J	рН	0.00	0.3	26-SEP-19
SO4-IC-N-VA	Water							



Workorder: L2354648 Report Date: 10-OCT-19 Page 8 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-VA	Water							
Batch R4849256	5							
WG3174499-3 DUP Sulfate (SO4)		L2354648-1 2.58	2.59		mg/L	0.3	20	27-SEP-19
WG3174499-2 LCS Sulfate (SO4)			105.6		%		90-110	27-SEP-19
WG3174499-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	27-SEP-19
WG3174499-4 MS Sulfate (SO4)		L2354653-2	105.0		%		75-125	27-SEP-19
TDS-VA	Water							
Batch R4856489	9							
WG3177491-6 DUP Total Dissolved Solids		L2354648-3 325	338		mg/L	4.1	20	01-OCT-19
WG3177491-5 LCS Total Dissolved Solids			107.1		%		85-115	01-OCT-19
WG3177491-4 MB Total Dissolved Solids			<10		mg/L		10	01-OCT-19
VH-HSFID-VA	Water							
Batch R4824470)							
WG3177586-3 DUP Volatile Hydrocarbons	(VH6-10)	L2356760-2 <0.10	<0.10	RPD-NA	mg/L	N/A	30	01-OCT-19
WG3177586-2 LCS Volatile Hydrocarbons	(VH6-10)		88.6		%		70-130	01-OCT-19
WG3177586-1 MB Volatile Hydrocarbons	(VH6-10)		<0.10		mg/L		0.1	01-OCT-19
VOC-HSMS-VA	Water				-			
Batch R4821270)							
WG3177586-2 LCS								
Bromodichloromethane	Э		92.4		%		70-130	01-OCT-19
Bromoform			83.8		%		70-130	01-OCT-19
Carbon Tetrachloride			106.9		%		70-130	01-OCT-19
Chlorobenzene			107.0		%		70-130	01-OCT-19
Dibromochloromethan	е		95.8		%		70-130	01-OCT-19
Chloroethane			112.0		%		60-140	01-OCT-19
Chloroform			97.5		%		70-130	01-OCT-19
Chloromethane			156.1	LCS-ND	%		60-140	01-OCT-19
1,2-Dichlorobenzene			109.1		%		70-130	01-OCT-19



Workorder: L2354648 Report Date: 10-OCT-19 Page 9 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							_
Batch R482127	0							
WG3177586-2 LCS								
1,3-Dichlorobenzene			94.0		%		70-130	01-OCT-19
1,4-Dichlorobenzene			111.0		%		70-130	01-OCT-19
1,1-Dichloroethane			105.6		%		70-130	01-OCT-19
1,2-Dichloroethane			92.7		%		70-130	01-OCT-19
1,1-Dichloroethylene			106.2		%		70-130	01-OCT-19
cis-1,2-Dichloroethyle			95.8		%		70-130	01-OCT-19
trans-1,2-Dichloroethy	rlene		115.4		%		70-130	01-OCT-19
Dichloromethane			119.2		%		60-140	01-OCT-19
1,2-Dichloropropane			85.2		%		70-130	01-OCT-19
cis-1,3-Dichloropropyle	ene		91.9		%		70-130	01-OCT-19
trans-1,3-Dichloroprop	ylene		88.8		%		70-130	01-OCT-19
1,1,1,2-Tetrachloroeth	ane		101.0		%		70-130	01-OCT-19
1,1,2,2-Tetrachloroeth	ane		87.4		%		70-130	01-OCT-19
Tetrachloroethylene			106.1		%		70-130	01-OCT-19
1,1,1-Trichloroethane			105.4		%		70-130	01-OCT-19
1,1,2-Trichloroethane			86.0		%		70-130	01-OCT-19
Trichloroethylene			105.2		%		70-130	01-OCT-19
Trichlorofluoromethan	е		134.5		%		60-140	01-OCT-19
Vinyl Chloride			147.9	LCS-ND	%		60-140	01-OCT-19
WG3177586-1 MB Bromodichloromethan	e		<0.0010		mg/L		0.001	01-OCT-19
Bromoform			<0.0010		mg/L		0.001	01-OCT-19
Carbon Tetrachloride			<0.00050		mg/L		0.0005	01-OCT-19
Chlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
Dibromochloromethan	ie		<0.0010		mg/L		0.001	01-OCT-19
Chloroethane			<0.0010		mg/L		0.001	01-OCT-19
Chloroform			<0.0010		mg/L		0.001	01-OCT-19
Chloromethane			<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	01-OCT-19
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,2-Dichloroethane			<0.0010		mg/L		0.001	01-OCT-19
1,1-Dichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
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Workorder: L2354648 Report Date: 10-OCT-19 Page 10 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-HSMS-VA	Water							
Batch R48212	270							
WG3177586-1 ME			0.0040		//		0.004	
cis-1,2-Dichloroethyl			<0.0010		mg/L		0.001	01-OCT-19
trans-1,2-Dichloroetl	nyiene		<0.0010		mg/L		0.001	01-OCT-19
Dichloromethane			<0.0050		mg/L		0.005	01-OCT-19
1,2-Dichloropropane			<0.0010		mg/L		0.001	01-OCT-19
cis-1,3-Dichloroprop	•		<0.00050		mg/L		0.0005	01-OCT-19
trans-1,3-Dichloropro	• •		<0.00050		mg/L		0.0005	01-OCT-19
1,1,1,2-Tetrachloroe			<0.0010		mg/L		0.001	01-OCT-19
1,1,2,2-Tetrachloroe			<0.00020		mg/L		0.0002	01-OCT-19
Tetrachloroethylene			<0.0010		mg/L		0.001	01-OCT-19
1,1,1-Trichloroethan			<0.0010		mg/L		0.001	01-OCT-19
1,1,2-Trichloroethan	е		<0.00050		mg/L		0.0005	01-OCT-19
Trichloroethylene			<0.0010		mg/L		0.001	01-OCT-19
Trichlorofluorometha	ane		<0.0010		mg/L		0.001	01-OCT-19
Vinyl Chloride			<0.00040		mg/L		0.0004	01-OCT-19
VOC7-HSMS-VA	Water							
Batch R48212								
WG3177586-3 DU Benzene	IP	L2356760-2 < 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
Methyl t-butyl ether (MTRE)	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	
Styrene	(WITBL)	<0.00050	<0.00050					01-OCT-19
Toluene				RPD-NA	mg/L	N/A	30	01-OCT-19
		<0.00045	<0.00045	RPD-NA	mg/L	N/A	30	01-OCT-19
meta- & para-Xylene	;	<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
ortho-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	01-OCT-19
WG3177586-2 LC Benzene	S		95.7		%		70-130	01-OCT-19
Ethylbenzene			96.7		%			
Methyl t-butyl ether (MTRE)		106.2		%		70-130 70-130	01-OCT-19 01-OCT-19
Styrene	(WITBL)		85.2		%			
Toluene			92.6		%		70-130	01-OCT-19
meta- & para-Xylene	2		104.6		%		70-130	01-OCT-19
ortho-Xylene	•		95.6		%		70-130	01-OCT-19
-			ა ა.ა		/0		70-130	01-OCT-19
WG3177586-1 ME Benzene	5		<0.00050		mg/L		0.0005	01-OCT-19



Workorder: L2354648 Report Date: 10-OCT-19 Page 11 of 13

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	Water							
Batch R48212	270							
WG3177586-1 ME Ethylbenzene	3		<0.00050		mg/L		0.0005	01-OCT-19
Methyl t-butyl ether	(MTBE)		<0.00050		mg/L		0.0005	01-OCT-19
Styrene			< 0.00050		mg/L		0.0005	01-OCT-19
Toluene			< 0.00045		mg/L		0.00045	01-OCT-19
meta- & para-Xylene	е		<0.00050		mg/L		0.0005	01-OCT-19
ortho-Xylene			<0.00050		mg/L		0.0005	01-OCT-19

Workorder: L2354648 Report Date: 10-OCT-19

GHD Limited Client: Page 12 of 13

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
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.

Workorder: L2354648 Report Date: 10-OCT-19

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Dissolved Solids by C	3ravimetric						
	1	23-SEP-19 17:50	01-OCT-19 06:20	7	8	days	EHT
	2	23-SEP-19 18:20	01-OCT-19 06:20	7	8	days	EHT
pH by Meter (Automated)							
	1	23-SEP-19 17:50	26-SEP-19 19:45	0.25	74	hours	EHTR-FM
	2	23-SEP-19 18:20	26-SEP-19 19:45	0.25	73	hours	EHTR-FN
	3	23-SEP-19 18:45	26-SEP-19 19:45	0.25	73	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low	/ Level)						
	1	23-SEP-19 17:50	27-SEP-19 06:30	3	4	days	EHTL
	2	23-SEP-19 18:20	27-SEP-19 06:30	3	4	days	EHTL
Nitrite in Water by IC (Low	Level)						
	1	23-SEP-19 17:50	27-SEP-19 06:30	3	4	days	EHTL
	2	23-SEP-19 18:20	27-SEP-19 06:30	3	4	days	EHTL
Logand & Qualifier Definitio							

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2354648 were received on 26-SEP-19 09:45.

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 predetermined 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 Environment

Chain of Custody (COC) / Analytical Request Form

L2354648-COFC

COC Number: 17 ~

Page of

Onmental Canada Toli Free: 1 800 668 9878

	www.aisgiobai.com	<u>`.</u>														
Report To	Contact and company name below will appear on the final report	Report Format	/ Distribution		Select	Service L	evel Belo	w - Con	tact yo	ur AM to c	onfirm all	E&P TATs	(surcharg	es may :	apply)	\neg
Company:	GHD Limited	Select Report Format: ☑ PDF [☑ EXCEL ☑ EDD (DIGITAL)		Reç	ular [R]	☑ Stand	ord TAT i	f receive	d by 3 pm -	business da	ys - no surch	arges apply			
Contact:	Airesse MacPhee	Quality Control (QC) Report with R	eport ☑ YES ☐ NO	_ (£)	4 day	[P4-20%]		Š Š	1 B	usiness (day [E1 -	100%]				
Phone: ,	604 248 3661	Compare Results to Criteria on Report -	provide details below if box checked	IPS S	3 day	[P3-25%]		FRGE	San	ie Dav. W	veekend o	r Statutoi	ry holida	y [E2 -2	00%	$_{\sqcap}$
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Street:	455 Phillip Street	Email 1 or Fax airesse, macphee(@ghd.com	D	ate and	Time Requ	iired for al	E&P TA	λTs:			dd-mmm-	yy hh:mr	n		
City/Province:	Waterloo, ON	Email 2 Laurie.Clark@ghd	.com, Natasha.Turl@ghd.com	For test	s that c	an not be per	formed acco	ording to	the servi	ce level selec	ted, you will	be contacted.				
Postal Code:	N2L 3X2	Email 3 Michaela.Dyck@g	hd.com,Lainey.Kong@ghd.com						Aı	ialysis R	equest					
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Dis	stribution			Indicate Fi	itered (F), F	Preserve	d (P) or	Filtered and	Preserved (F/P) below			deta	
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ALS Sample #	Sample Identification and/or Coordinates	Date	Time	1 €	2	-		- A	>			1	1 1]	뾽	ᇤ
(lab use only)	(This description will appear on the report)	(dd-mmm-yy)	(hh:mm) Sample Type	l¥a	i v	됩니	물	SOL	700					SAMPLES	Sampl	NUMBER
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Are samples tak	en from a Regulated DW System?	1 1 .					Cubes			ea! intact		Ī	N		Ě	
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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 Field Sample Key (FSK)

Site Campbell River Landfill (056484-52)

Sample Reason Q4 2019 EMP

Sampler Name N. Turl & C. Thorne

Sampling Company GHD Ltd.

SSOW Reference Code :

Laboratory(s)	ALS	Environmental		-						Tempe	erature	рН	Eh /	ORP	Condu	uctivity	Turb	idity	D	0	TDS
Sample ID	Location	Sample Date (mm/dd/yyyy)	Sample Time (hh:mm)	Sample Type	Sample Matrix	Grab or Composite	Parent Sample ID for Field Dups	Footnote(s)	Volume of Water Purged (L)	Sample Temperature	Temperature Units	Field pH (s.u.)	Eh / ORP	Eh / ORP Units	Conductivity	Conductivity Units	Turbidity	Turbidity Units	Dissolved Oxygen	Dissolved Oxygen Units	Total Dissolved Solids
GROUNDWATER																					
WG-56484-181119-NT-01	MW01-16	11/18/2019	11:15	N	WG	Grab			52	7.30	С	6.87	180	mV	117	uS/cm	7.4	ntu	-	mg/L	0.076
WG-56484-181119-NT-02	EBA11-2	11/18/2019	11:45	N	WG	Grab			126	10.54	С	7.34	157	mV	407	uS/cm	46.2	ntu	-	mg/L	0.264
WG-56484-181119-NT-03	EBA04-1	11/18/2019	12:30	N	WG	Grab			-	10.93	С	6.29	194	mV	104	uS/cm	3.0	ntu	-	mg/L	0.068
WG-56484-181119-NT-04	AG99-01	11/18/2019	13:00	N	WG	Grab			120	10.69	С	6.77	188	mV	220	uS/cm	3.3	ntu	-	mg/L	0.143
WG-56484-181119-NT-05	AG99-02	11/18/2019	14:00	N	WG	Grab			129	11.31	С	7.76	193	mV	190	uS/cm	0.7	ntu	1	mg/L	0.123
WG-56484-181119-NT-06	AG99-02	11/18/2019	14:05	FD	WG	Grab	WG-56484-181119-NT-05		129	11.31	С	7.76	193	mV	190	uS/cm	0.7	ntu	-	mg/L	0.123
WG-56484-181119-NT-07	MW02-18	11/18/2019	14:30	N	WG	Grab			96	11.35	С	6.64	111	mV	904	uS/cm	0.2	ntu	-	mg/L	0.579
WG-56484-181119-NT-08	AG99-04	11/18/2019	16:00	N	WG	Grab			138	10.37	С	7.86	133	mV	130	uS/cm	0.0	ntu	1	mg/L	0.085
WG-56484-181119-NT-09	EBA11-1	11/18/2019	16:45	N	WG	Grab			60	9.71	С	7.28	-54	mV	1150	uS/cm	8.0	ntu	1	mg/L	0.733
WG-56484-191119-NT-10	EBA04-7	11/19/2019	8:20	N	WG	Grab			72.5	9.07	С	6.82	266	mV	844	uS/cm	0.7	ntu	1	mg/L	0.540
WG-56484-191119-NT-11	EBA04-6	11/19/2019	8:30	N	WG	Grab			132	10.10	С	6.91	157	mV	581	uS/cm	1.2	ntu	1	mg/L	0.371
WG-56484-191119-NT-12	MW04-19	11/19/2019	11:30	N	WG	Grab			>200	8.77	С	8.08	167	mV	128	uS/cm	513	ntu	1	mg/L	0.083
WG-56484-191119-NT-13	MW03-18	11/19/2019	12:15	N	WG	Grab			60	11.21	С	7.83	226	mV	203	uS/cm	0.0	ntu	1	mg/L	0.132
WG-56484-191119-NT-14	MW03-18	11/19/2019	12:20	FD	WG	Grab	WG-56484-191119-NT-13		60	11.21	С	7.83	226	mV	203	uS/cm	0.0	ntu	ı	mg/L	0.132
WG-56484-191119-NT-15	AG99-05	11/19/2019	12:30	N	WG	Grab			180	10.96	С	7.89	177	mV	105	uS/cm	1.2	ntu	1	mg/L	0.068
WG-56484-191119-NT-16	EBA11-3	11/19/2019	13:40	N	WG	Grab			70	10.71	С	7.42	199	mV	176	uS/cm	8.7	ntu	ı	mg/L	0.115
WG-56484-191119-NT-17	EBA11-4	11/19/2019	14:15	N	WG	Grab			55	10.43	С	7.50	197	mV	120	uS/cm	30	ntu	ı	mg/L	0.078
WG-56484-191119-NT-18	AG99-06	11/19/2019	14:35	N	WG	Grab			28	9.30	С	7.55	218	mV	194	uS/cm	>800	ntu	-	mg/L	0.126
WG-56484-191119-NT-19	Field Blank	11/19/2019	14:30	N	WG	Grab			1	-	С	-	-	mV	ı	uS/cm	-	ntu	ı	mg/L	-
WG-56484-251119-CT-01	HBT94-2	11/25/2019	12:35	N	WG	Grab			116	10.78	С	7.55	-53	mV	433	uS/cm	7.0	ntu	-	mg/L	0.282
WG-56484-251119-CT-02	HBT94-1	11/25/2019	13:00	N	WG	Grab			33	11.85	С	7.29	-53	mV	485	uS/cm	0.0	ntu	-	mg/L	0.316
SURFACE WATER																					
WS-56484-191119-NT-01	SW-1	11/19/2019	10:15	N	WS	Grab			-	7.28	С	7.85	158	mV	29	uS/cm	0.4	ntu	10.85	mg/L	0.019
WS-56484-191119-NT-02	SW03-17	11/19/2019	10:30	N	WS	Grab			1	7.39	С	7.15	216	mV	29	uS/cm	0.3	ntu	7.4	mg/L	0.019



GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 20-NOV-19

Report Date: 27-NOV-19 18:03 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2385415Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River GW

Selam Worku Account Manager

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-1 WG-56484-181119-NT-01 Sampled By: N. Turl on 18-NOV-19 @ 11:15 Matrix: Water							
Physical Tests							
Conductivity	109		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	52.2		0.50	mg/L		22-NOV-19	
pH	7.82		0.10	рH		21-NOV-19	R4920107
Total Dissolved Solids	76		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	51.6		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	51.6		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	1.20		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	
Nitrate and Nitrite (as N)	0.415		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.415		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.46		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals				Ü			
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0020		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00224		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	16.7		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00033		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	2.56		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000081		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-1 WG-56484-181119-NT-01 Sampled By: N. Turl on 18-NOV-19 @ 11:15							
Matrix: Water Dissolved Metals							
	0.445		0.050	/1	20 NOV 40	20 NOV 40	D 4004 500
Potassium (K)-Dissolved	0.145		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000123		0.000050	mg/L	20-NOV-19 20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	3.45		0.050	mg/L		22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19		R4921598
Sodium (Na)-Dissolved	1.27		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0252		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.69		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00097		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-2 WG-56484-181119-NT-02 Sampled By: N. Turl on 18-NOV-19 @ 11:45 Water							
Physical Tests							
Conductivity	370		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	192		0.50	mg/L		22-NOV-19	
рН	8.14		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	232		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	189		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	189		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	14.7		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.393		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.393		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	4.89		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (AI)-Dissolved	0.0176		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-2 WG-56484-181119-NT-02 Sampled By: N. Turl on 18-NOV-19 @ 11:45 Matrix: Water							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00928		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.011		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	56.5		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00160		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00049		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	0.061		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	12.4		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	0.00067		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000057		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	
Potassium (K)-Dissolved	1.03		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	0.00048		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000133		0.000050	mg/L	20-NOV-19	22-NOV-19	
Silicon (Si)-Dissolved	8.68		0.050	mg/L	20-NOV-19		R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Sodium (Na)-Dissolved	4.40		0.050	mg/L	20-NOV-19	22-NOV-19	
Strontium (Sr)-Dissolved	0.115		0.00020	mg/L	20-NOV-19	22-NOV-19	
Sulfur (S)-Dissolved	1.59		0.50	mg/L	20-NOV-19	22-NOV-19	
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Tin (Sn)-Dissolved Titanium (Ti)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Tungsten (W)-Dissolved	0.00101		0.00030	mg/L	20-NOV-19	22-NOV-19	
Uranium (U)-Dissolved	<0.00010		0.00010 0.000010	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
	0.000257			mg/L			
Vanadium (V)-Dissolved Zinc (Zn)-Dissolved	0.00278		0.00050	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
	<0.0010		0.0010	mg/L			
Zirconium (Zr)-Dissolved L2385415-3 WG-56484-181119-NT-03 Sampled By: N. Turl on 18-NOV-19 @ 12:30 Matrix: Water * Pefer to Referenced Information for Qualifiers (if pay) and	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	K4921598

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

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Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
85.3		2.0	uS/cm		21-NOV-19	R4920107
			mg/L		22-NOV-19	
7.91		0.10	рH		21-NOV-19	R4920107
			•		21-NOV-19	R4921315
			3			
43.0		1.0	mg/L		21-NOV-19	R4920107
<1.0		1.0	mg/L		21-NOV-19	R4920107
<1.0		1.0	mg/L		21-NOV-19	R4920107
43.0		1.0	mg/L		21-NOV-19	R4920107
<0.0050		0.0050	mg/L		21-NOV-19	R4921471
0.73		0.50	mg/L		21-NOV-19	R4920286
<0.020		0.020	mg/L		21-NOV-19	
0.0466		0.0051	mg/L		22-NOV-19	
0.0466		0.0050			21-NOV-19	R4920286
<0.0010		0.0010	_		21-NOV-19	R4920286
2.26		0.30	-		21-NOV-19	R4920286
			Ü			
FIELD					21-NOV-19	R4919894
FIELD					20-NOV-19	R4919103
0.0039		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
0.00033		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
0.00040		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
0.0000058		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
12.8		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.000010		0.000010		20-NOV-19	22-NOV-19	R4921598
0.00033		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
0.00214		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
0.018				20-NOV-19	22-NOV-19	R4921598
			•	20-NOV-19	22-NOV-19	
<0.0010		0.0010		20-NOV-19	22-NOV-19	R4921598
1.57		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
0.00042		0.00010	•	20-NOV-19	22-NOV-19	R4921598
			•			R4920204
						R4921598
			•			R4921598
<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
	85.3 38.4 7.91 56 43.0 <1.0 <1.0 43.0 <0.0050 0.73 <0.020 0.0466 0.0466 <0.0010 2.26 FIELD FIELD 0.0039 <0.00010 0.00033 0.00040 <0.00010 <0.000050 <0.010 0.000058 12.8 <0.00010 0.00033 <0.00010 0.00033 <0.00010 1.57 0.00042 <0.000050	85.3 38.4 7.91 56 43.0 <1.0 <1.0 43.0 <0.0050 0.73 <0.020 0.0466 0.0466 <0.0010 2.26 FIELD FIELD 0.0039 <0.00010 0.00033 0.00040 <0.00010 <0.000050 <0.010 0.000058 12.8 <0.00010 0.00033 <0.00010 0.00033 <0.00010 1.57 0.00042 <0.000050 0.000152 <0.00050	85.3 38.4 0.50 7.91 0.10 56 13 43.0 1.0 1.0 1.0 1.0 1.0 43.0 1.0 1.0 43.0 0.73 0.50 0.73 0.50 0.020 0.0466 0.0051 0.0466 0.0051 0.0466 0.0051 0.0466 0.0010 2.26 0.0010 0.0039 0.0010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.00010 0.000050 12.8 0.000010 0.000050 12.8 0.000010 0.000050 12.8 0.000010 0.000050 0.000050 12.8 0.000010 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050	85.3 38.4 0.50 mg/L 7.91 0.10 pH 56 13 mg/L 43.0 1.0 mg/L <1.0 1.0 mg/L <1.0 1.0 mg/L 43.0 1.0 mg/L 43.0 0.50 mg/L 43.0 0.0050 0.0050 mg/L 0.0050 0.0050 mg/L 0.0466 0.0051 mg/L 0.0466 0.0051 mg/L 0.0010 0.0010 mg/L 2.26 0.30 mg/L FIELD FIELD FIELD FIELD 0.0033 0.00010 mg/L <0.00010 0.00010 mg/L 0.00050 mg/L 0.00050 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00010 mg/L 0.000050 mg/L 0.000050 mg/L 12.8 0.050 mg/L 0.000010 mg/L 0.000050 mg/L 0.000010 mg/L 0.000050 mg/L 0.000050 mg/L 0.000050 mg/L 0.00010 mg/L 0.000050 mg/L 0.00010 mg/L	85.3 38.4 7.91 0.10 pH 56 13 mg/L 43.0 1.0 mg/L <1.0 1.0 mg/L <1.0 1.0 mg/L <1.0 1.0 mg/L <1.0 1.0 mg/L <1.0 1.0 mg/L <1.0 0.0050 0.0050 mg/L 0.020 0.020 mg/L 0.0466 0.0051 mg/L 0.0466 0.0051 mg/L 2.26 0.30 mg/L <1.0 0.0010 mg/L 2.26 0.30 mg/L 0.00033 0.00010 0.00010 mg/L 0.00040 0.00010 0.00010 mg/L 20-NOV-19 0.000050 0.000050 mg/L 20-NOV-19 0.000050 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 12.8 0.050 mg/L 20-NOV-19 0.00033 0.00010 mg/L 20-NOV-19 0.00033 0.00010 mg/L 20-NOV-19 0.000050 mg/L 20-NOV-19 0.00033 0.00010 mg/L 20-NOV-19 0.00034 0.00010 0.00010 mg/L 20-NOV-19 0.00065 0.000050 mg/L 20-NOV-19 0.00042 0.00010 0.00010 mg/L 20-NOV-19 0.000152 0.000050 mg/L 20-NOV-19 0.000152 0.000050 mg/L 20-NOV-19	85.3 38.4 0.50 mg/L 22-NOV-19 56 13 mg/L 21-NOV-19 56 13 mg/L 21-NOV-19 56 13 mg/L 21-NOV-19 56 13 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 1.0 mg/L 21-NOV-19 43.0 0.73 0.50 mg/L 21-NOV-19 0.73 0.50 mg/L 21-NOV-19 0.0466 0.0050 0.020 mg/L 21-NOV-19 0.0466 0.0050 mg/L 22-NOV-19 0.0466 0.0050 mg/L 21-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 0.0033 0.00010 mg/L 20-NOV-19 22-NOV-19 0.00033 0.00010 mg/L 20-NOV-19 22-NOV-19 0.000050 mg/L 20-NOV-19 22-NOV-19 22-NOV-19 0.000050 mg/L 20-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 0.000050 mg/L 20-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 0.000050 mg/L 20-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19 22-NOV-19

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-3 WG-56484-181119-NT-03 Sampled By: N. Turl on 18-NOV-19 @ 12:30 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	0.221		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.000056		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	3.80		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Sodium (Na)-Dissolved	1.19		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0204		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.0204		0.50	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Tin (Sn)-Dissolved	0.00016		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19 22-NOV-19	
Uranium (U)-Dissolved	0.00014			-	20-NOV-19	22-NOV-19	
Vanadium (V)-Dissolved	0.00014		0.000010 0.00050	mg/L mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	R4921598 R4921598
Zinc (Zn)-Dissolved	0.00234		0.00030	-	20-NOV-19		R4921598
Ziric (Zri)-Dissolved Zirconium (Zr)-Dissolved	<0.0020		0.0010	mg/L mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	R4921598
L2385415-4 WG-56484-181119-NT-04 Sampled By: N. Turl on 18-NOV-19 @ 13:00 Water Water							
Physical Tests							
Conductivity	190		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	96.4		0.50	mg/L		22-NOV-19	
рН	8.09		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	122		13	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	105		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	105		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	
Chloride (CI)	2.93		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.146		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.146		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.63		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (AI)-Dissolved	0.0025		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-4 WG-56484-181119-NT-04 Sampled By: N. Turl on 18-NOV-19 @ 13:00 Matrix: Water							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00079		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00176		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	31.2		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00057		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00051		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	4.51		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	
Molybdenum (Mo)-Dissolved	0.000104		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	
Potassium (K)-Dissolved	0.721		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.000122		0.000050	mg/L	20-NOV-19	22-NOV-19	
Silicon (Si)-Dissolved	5.99		0.050	mg/L	20-NOV-19		R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Sodium (Na)-Dissolved	2.19		0.050	mg/L	20-NOV-19	22-NOV-19	
Strontium (Sr)-Dissolved	0.0470		0.00020	mg/L	20-NOV-19	22-NOV-19	
Sulfur (S)-Dissolved	0.80		0.50	mg/L	20-NOV-19	22-NOV-19	
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Tin (Sn)-Dissolved Titanium (Ti)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Tungsten (W)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	
Uranium (U)-Dissolved	<0.00010		0.00010 0.000010	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
	0.000088			mg/L			
Vanadium (V)-Dissolved Zinc (Zn)-Dissolved	0.00588		0.00050	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
	<0.0010		0.0010	mg/L			
Zirconium (Zr)-Dissolved L2385415-5 WG-56484-181119-NT-05 Sampled By: N. Turl on 19-NOV-19 @ 14:00 Matrix: Water * Pefer to Referenced Information for Qualifiers (if pay) and	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	K4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-5 WG-56484-181119-NT-05 Sampled By: N. Turl on 19-NOV-19 @ 14:00 Water Water							
Physical Tests							
Conductivity	166		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	84.4		0.50	mg/L		22-NOV-19	
pH	8.16		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	108		13	mg/L		21-NOV-19	R4921315
Anions and Nutrients				-			
Alkalinity, Bicarbonate (as CaCO3)	88.6		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	88.6		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	1.40		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.185		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.183		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	0.0012		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.29		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals				-			
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0064		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00229		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00385		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000115		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	26.5		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00056		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00045		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	4.42		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000109		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-5 WG-56484-181119-NT-05 Sampled By: N. Turl on 19-NOV-19 @ 14:00 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	1.15		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.000159		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	5.53		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19		R4921598
Sodium (Na)-Dissolved	1.48		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0338		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.80		0.50	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	0.00029		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000146		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.0221		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-6 WG-56484-181119-NT-06 Sampled By: N. Turl on 18-NOV-19 @ 14:05 Matrix: Water							
Physical Tests							
Conductivity	166		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	85.9		0.50	mg/L		22-NOV-19	
рН	8.16		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	104		13	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	89.4		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	89.4		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	1.41		0.50	mg/L			R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.184		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.184		0.0050	mg/L		21-NOV-19	
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.29		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals	FIEL S					04 NOV 40	D4040004
Dissolved Metals Filtration Location	FIELD					21-NOV-19	
Dissolved Metals Filtration Location	FIELD		0.0040	po a //	20 NOV 40	20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0054		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-6 WG-56484-181119-NT-06							
Sampled By: N. Turl on 18-NOV-19 @ 14:05 Matrix: Water							
Matrix: Water Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00228		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00398		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19		R4921598
Cadmium (Cd)-Dissolved	0.0000127		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	27.2		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00053		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00053		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	4.35		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000101		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	1.16		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000170		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	5.52		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	1.48		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0332		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.69		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	0.00050		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19		R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000150		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.0220		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-7 WG-56484-181119-NT-07 Sampled By: N. Turl on 18-NOV-19 @ 14:30 Matrix: Water							
* Refer to Referenced Information for Qualifiers (if any) and	l Mathadalamı				l .	l	1

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-7 WG-56484-181119-NT-07 Sampled By: N. Turl on 18-NOV-19 @ 14:30 Water Water							
Physical Tests							
Conductivity	815		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	254		0.50	mg/L		22-NOV-19	
рН	7.54		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	439		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients				•			
Alkalinity, Bicarbonate (as CaCO3)	417		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	417		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	9.87		0.25	mg/L		21-NOV-19	R4921471
Chloride (CI)	31.0		2.5	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.10	DLDS	0.10	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	<0.025		0.025	mg/L		22-NOV-19	
Nitrate (as N)	<0.025	DLDS	0.025	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.0		1.5	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0052		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00024		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.0421		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.524		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.000119		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	75.7		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	0.00167		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.0131		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	0.030		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	15.8		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	3.09		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000665		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	0.00183		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-7 WG-56484-181119-NT-07 Sampled By: N. Turl on 18-NOV-19 @ 14:30 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	13.1		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	0.00055		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	13.7		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	60.6		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.375		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	1.17		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	0.00013		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000523		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00190		0.00050	mg/L	20-NOV-19		R4921598
Zinc (Zn)-Dissolved	0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-8 WG-56484-181119-NT-08 Sampled By: N. Turl on 18-NOV-19 @ 16:00 Matrix: Water							
Physical Tests							
Conductivity	114		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	56.3		0.50	mg/L		25-NOV-19	
рН	7.98		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	71		13	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	58.3		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	
Alkalinity, Total (as CaCO3)	58.3		1.0	mg/L		21-NOV-19	
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	1.16		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.123		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.123		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.42		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0048		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-8 WG-56484-181119-NT-08 Sampled By: N. Turl on 18-NOV-19 @ 16:00 Water Water							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00035		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00075		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	24-NOV-19	R4922883
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	19.4		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00062		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	1.92		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	24-NOV-19	R4922883
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000116		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	0.275		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000127		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	3.61		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	1.48		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0289		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.74		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000035		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00262		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-9 WG-56484-181119-NT-09 Sampled By: N. Turl on 18-NOV-19 @ 16:45 Matrix: Water							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-9 WG-56484-181119-NT-09 Sampled By: N. Turl on 18-NOV-19 @ 16:45							
Matrix: Water							
Physical Tests	4040			0/		04 NOV 40	D 4000407
Conductivity	1010		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	534		0.50	mg/L		22-NOV-19	D 4000407
pH Tatal Bissahard Calida	8.09		0.10	pН		21-NOV-19	
Total Dissolved Solids Anions and Nutrients	618		20	mg/L		21-NOV-19	R4921315
Alkalinity, Bicarbonate (as CaCO3)	391		1.0	mg/L		21-NOV-19	P4020107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L			R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0			-		21-NOV-19	
	391		1.0 1.0	mg/L		21-NOV-19 21-NOV-19	
Alkalinity, Total (as CaCO3)				mg/L			
Ammonia, Total (as N) Chloride (Cl)	0.0229		0.0050	mg/L			R4921471
()	120	DLDS	2.5	mg/L			R4920286
Fluoride (F)	<0.10	DLDS	0.10	mg/L			R4920286
Nitrate and Nitrite (as N)	<0.025	DLDC	0.025	mg/L		22-NOV-19	D 4000000
Nitrate (as N)	<0.025	DLDS	0.025	mg/L		21-NOV-19	
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		21-NOV-19	
Sulfate (SO4) Dissolved Metals	11.8		1.5	mg/L		21-NOV-19	R4920286
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
•							
Dissolved Metals Filtration Location	FIELD		0.0040	a/l	20 NOV 40		R4919103
Aluminum (Al)-Dissolved	0.0049		0.0010	mg/L	20-NOV-19		R4921598
Antimony (Sb)-Dissolved	0.00020		0.00010	mg/L	20-NOV-19		R4921598
Arsenic (As)-Dissolved	0.00123		0.00010	mg/L	20-NOV-19		R4921598
Barium (Ba)-Dissolved	0.0206		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19		R4921598
Boron (B)-Dissolved	0.062		0.010	mg/L	20-NOV-19		R4921598
Cadmium (Cd)-Dissolved	0.0000573		0.0000050	mg/L	20-NOV-19	22-NOV-19	
Calcium (Ca)-Dissolved	155		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00034		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	0.00393		0.00010	mg/L	20-NOV-19		R4921598
Copper (Cu)-Dissolved	0.00400		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	0.144		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	35.7		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	1.85		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	0.0000527		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000420		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	0.00200		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050	1	0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-9 WG-56484-181119-NT-09 Sampled By: N. Turl on 18-NOV-19 @ 16:45 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	1.46		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000121		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	7.50		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	0.000063		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	9.58		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.315		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	4.91		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	0.00018		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000968		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00272		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	0.0024		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-10 WG-56484-191119-NT-10 Sampled By: N. Turl on 19-NOV-19 @ 08:20 Matrix: Water							
Physical Tests							
Conductivity	843		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	429		0.50	mg/L		22-NOV-19	
рН	7.68		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	537		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	440		1.0	mg/L			R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	
Alkalinity, Total (as CaCO3)	440		1.0	mg/L		21-NOV-19	
Ammonia, Total (as N)	<0.0050		0.0050	mg/L			R4921471
Chloride (CI)	33.6		2.5	mg/L			R4920286
Fluoride (F)	<0.10	DLDS	0.10	mg/L			R4920286
Nitrate and Nitrite (as N)	0.784		0.025	mg/L		22-NOV-19	
Nitrate (as N)	0.784		0.025	mg/L		21-NOV-19	
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		21-NOV-19	
Sulfate (SO4)	12.6		1.5	mg/L		21-NOV-19	R4920286
Dissolved Metals						04 NOV 15	
Dissolved Mercury Filtration Location	FIELD						R4919894
Dissolved Metals Filtration Location	FIELD		0.00:-		00 11017 15		R4919103
Aluminum (AI)-Dissolved	0.0013		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2385415-10 WG-56484-191119-NT-10						
Sampled By: N. Turl on 19-NOV-19 @ 08:20 Matrix: Water						
Dissolved Metals						
Antimony (Sb)-Dissolved	<0.00010	0.0001	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00014	0.0001		20-NOV-19	22-NOV-19	
Barium (Ba)-Dissolved	0.0165	0.0001		20-NOV-19	22-NOV-19	
Beryllium (Be)-Dissolved	<0.00010	0.0001		20-NOV-19		R4921598
Bismuth (Bi)-Dissolved	<0.000050	0.00005	io mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.212	0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000482	0.00000	50 mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	127	0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010	0.00001	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	<0.00010	0.0001	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	0.00037	0.0001	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00276	0.0002	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010	0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050	0.00005	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	0.0011	0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	27.1	0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	0.160	0.0001	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.0000050	0.00000	50 mg/L	21-NOV-19	22-NOV-19	
Molybdenum (Mo)-Dissolved	0.000103	0.00005	mg/L	20-NOV-19	22-NOV-19	
Nickel (Ni)-Dissolved	0.00133	0.0005	0 mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050	0.050		20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	2.24	0.050		20-NOV-19		R4921598
Rubidium (Rb)-Dissolved	0.00113	0.0002		20-NOV-19	22-NOV-19	
Selenium (Se)-Dissolved	<0.000050	0.00005		20-NOV-19	22-NOV-19	
Silicon (Si)-Dissolved	13.4	0.050		20-NOV-19	22-NOV-19	
Silver (Ag)-Dissolved	<0.000010	0.00001	, and the second	20-NOV-19	22-NOV-19	
Sodium (Na)-Dissolved	30.0	0.050	· ·	20-NOV-19	22-NOV-19	
Strontium (Sr)-Dissolved	0.316	0.0002		20-NOV-19	22-NOV-19	
Sulfur (S)-Dissolved	5.03	0.50	mg/L	20-NOV-19	22-NOV-19	
Tellurium (Te)-Dissolved	<0.00020	0.0002		20-NOV-19 20-NOV-19	22-NOV-19	
Thallium (TI)-Dissolved Thorium (Th)-Dissolved	<0.00010	0.00001	•		22-NOV-19	
Tin (Sn)-Dissolved	<0.00010 0.00016	0.0001	· ·	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Titanium (Ti)-Dissolved	<0.00016	0.0001	•	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Tungsten (W)-Dissolved	<0.00030	0.0003	•	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Uranium (U)-Dissolved	0.000666	0.0001		20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Vanadium (V)-Dissolved	0.00066	0.0005	•	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Zinc (Zn)-Dissolved	<0.00176	0.0003	-	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Zirconium (Zr)-Dissolved	<0.0010	0.0002		20-NOV-19	22-NOV-19	
L2385415-11 WG-56484-191119-NT-11	10.00020	0.0002	g/L			1021000
Sampled By: N. Turl on 19-NOV-19 @ 08:30 Matrix: Water						

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-11 WG-56484-191119-NT-11 Sampled By: N. Turl on 19-NOV-19 @ 08:30 Water Water							
Physical Tests							
Conductivity	506		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	278		0.50	mg/L		25-NOV-19	
pH	7.92		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	315		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	283		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	283		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	3.65		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	1.93		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	1.93		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	5.64		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals				-			
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0019		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00676		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.074		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000267		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	83.4		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00107		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00045		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	16.9		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	24-NOV-19	R4922883
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-11 WG-56484-191119-NT-11 Sampled By: N. Turl on 19-NOV-19 @ 08:30 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	1.34		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	0.00050		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.000053		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	11.8		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19		R4921598
Sodium (Na)-Dissolved	7.09		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.177		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	2.22		0.50	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	0.00021		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000250		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00165		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-12 WG-56484-191119-NT-12 Sampled By: N. Turl on 19-NOV-19 @ 11:30 Matrix: Water							
Physical Tests							
Conductivity	112		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	49.7		0.50	mg/L		22-NOV-19	
рН	8.19		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	85		13	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	55.1		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	55.1		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	2.21		0.50	mg/L			R4920286
Fluoride (F)	0.023		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.177		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.177		0.0050	mg/L		21-NOV-19	
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	3.73		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals						04 NGV 15	
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	
Dissolved Metals Filtration Location	FIELD		0.0010	"	00 NOV 45	20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0151		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-12 WG-56484-191119-NT-12							
Sampled By: N. Turl on 19-NOV-19 @ 11:30 Matrix: Water							
Matrix: Water Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00052		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.0032		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.00050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19		R4921598
Cadmium (Cd)-Dissolved	0.0000054		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	15.1		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19		R4921598
Chromium (Cr)-Dissolved	0.00288		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00085		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	2.93		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	0.00131		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000372		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	1.13		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	0.00041		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000243		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	6.94		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	3.98		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0345		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	1.16		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	0.00024		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000138		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00438		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-13 WG-56484-191119-NT-13 Sampled By: N. Turl on 19-NOV-19 @ 12:15 Matrix: Water							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-13 WG-56484-191119-NT-13 Sampled By: N. Turl on 19-NOV-19 @ 12:15 Matrix: Water							
Physical Tests							
Conductivity	196		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	105		0.50	mg/L		22-NOV-19	
рН	8.16		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	171		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	109		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	109		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	2.86		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.149		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.149		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.21		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0048		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00053		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00268		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.024		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000061		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	37.0		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00027		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00102		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	3.06		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000132		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-13 WG-56484-191119-NT-13 Sampled By: N. Turl on 19-NOV-19 @ 12:15 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	0.648		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	0.00023		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.00023		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	4.29		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19		R4921598
Sodium (Na)-Dissolved	3.17		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0562		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.87		0.50	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved	<0.0020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00011		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19		R4921598
Uranium (U)-Dissolved	0.000086		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00267		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19		R4921598
Zirconium (Zr)-Dissolved	<0.0010		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-14 WG-56484-191119-NT-14 Sampled By: N. Turl on 19-NOV-19 @ 12:20 Matrix: Water							
Physical Tests							
Conductivity	197		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	101		0.50	mg/L		21-NOV-19	
pH	8.16		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	181		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	108		1.0	mg/L			R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L			R4920107
Alkalinity, Total (as CaCO3)	108		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	2.85		0.50	mg/L			R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.148		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.148		0.0050	mg/L		21-NOV-19	
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.22		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals	F.E. 5					04 NOV 45	D 40 40 55 5
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	
Dissolved Metals Filtration Location	LAB		0.0010	"	04 NOV 45	21-NOV-19	R4919179
Aluminum (Al)-Dissolved	0.0041		0.0010	mg/L	21-NOV-19	21-NOV-19	R4919320

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-14 WG-56484-191119-NT-14							
Sampled By: N. Turl on 19-NOV-19 @ 12:20 Matrix: Water							
Matrix: Water Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Arsenic (As)-Dissolved	0.00049		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Barium (Ba)-Dissolved	0.00043		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Beryllium (Be)-Dissolved	<0.00277		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Bismuth (Bi)-Dissolved	<0.00010		0.000050	mg/L	21-NOV-19	21-NOV-19	R4919320
Boron (B)-Dissolved	0.024		0.010	mg/L	21-NOV-19	21-NOV-19	R4919320
Cadmium (Cd)-Dissolved	0.0000097		0.0000050	mg/L	21-NOV-19	21-NOV-19	R4919320
Calcium (Ca)-Dissolved	35.5		0.050	mg/L	21-NOV-19	21-NOV-19	R4919320
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	21-NOV-19	21-NOV-19	R4919320
Chromium (Cr)-Dissolved	0.00029		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Copper (Cu)-Dissolved	0.00070		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-NOV-19	21-NOV-19	R4919320
Lead (Pb)-Dissolved	<0.00050		0.000050	mg/L	21-NOV-19	21-NOV-19	R4919320
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	21-NOV-19	21-NOV-19	R4919320
Magnesium (Mg)-Dissolved	2.92		0.0050	mg/L	21-NOV-19	21-NOV-19	R4919320
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000145		0.000050	mg/L	21-NOV-19	21-NOV-19	R4919320
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-NOV-19	21-NOV-19	R4919320
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	21-NOV-19	21-NOV-19	R4919320
Potassium (K)-Dissolved	0.698		0.050	mg/L	21-NOV-19	21-NOV-19	R4919320
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	21-NOV-19	21-NOV-19	R4919320
Selenium (Se)-Dissolved	0.000072		0.000050	mg/L	21-NOV-19	21-NOV-19	R4919320
Silicon (Si)-Dissolved	4.58		0.050	mg/L	21-NOV-19	21-NOV-19	R4919320
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	21-NOV-19	21-NOV-19	R4919320
Sodium (Na)-Dissolved	3.00		0.050	mg/L	21-NOV-19	21-NOV-19	R4919320
Strontium (Sr)-Dissolved	0.0602		0.00020	mg/L	21-NOV-19	21-NOV-19	R4919320
Sulfur (S)-Dissolved	0.59		0.50	mg/L	21-NOV-19	21-NOV-19	R4919320
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	21-NOV-19	21-NOV-19	
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	21-NOV-19	21-NOV-19	R4919320
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	21-NOV-19	21-NOV-19	R4919320
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	21-NOV-19	21-NOV-19	R4919320
Uranium (U)-Dissolved	0.000078		0.000010	mg/L	21-NOV-19	21-NOV-19	R4919320
Vanadium (V)-Dissolved	0.00260		0.00050	mg/L	21-NOV-19	21-NOV-19	R4919320
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	21-NOV-19	21-NOV-19	R4919320
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	21-NOV-19	21-NOV-19	R4919320
L2385415-15 WG-56484-191119-NT-15 Sampled By: N. Turl on 19-NOV-19 @ 12:30 Water							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-15 WG-56484-191119-NT-15 Sampled By: N. Turl on 19-NOV-19 @ 12:30 Water Water							
Physical Tests							
Conductivity	90.8		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	41.2		0.50	mg/L		22-NOV-19	
pH	7.90		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	95		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	46.3		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	46.3		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	0.87		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.0658		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.0658		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	2.19		0.30	mg/L		21-NOV-19	R4920286
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (AI)-Dissolved	0.0055		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00054		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00062		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	0.011		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	14.0		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00027		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	1.53		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000127		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-15 WG-56484-191119-NT-15							
Sampled By: N. Turl on 19-NOV-19 @ 12:30							
Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	0.332		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000109		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	4.03		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	1.41		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0230		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.70		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000018		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00363		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-16 WG-56484-191119-NT-16 Sampled By: N. Turl on 19-NOV-19 @ 13:40							
Matrix: Water							
Physical Tests							
Conductivity	155		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	76.0		0.50	mg/L		22-NOV-19	
рН	7.92		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	146		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	65.9		1.0	mg/L		21-NOV-19	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	65.9		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	10.0		0.50	mg/L		21-NOV-19	R4920426
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920426
Nitrate and Nitrite (as N)	0.0674		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.0674		0.0050	mg/L		21-NOV-19	R4920426
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920426
Sulfate (SO4)	2.54		0.30	mg/L		21-NOV-19	R4920426
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
		1		mg/L		22-NOV-19	1

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-16 WG-56484-191119-NT-16							
Sampled By: N. Turl on 19-NOV-19 @ 13:40							
Matrix: Water Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00019		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00079		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.000	mg/L	20-NOV-19		R4921598
Cadmium (Cd)-Dissolved	<0.000050		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	24.4		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19		R4921598
Chromium (Cr)-Dissolved	0.00031		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00037		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	3.68		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000158		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	0.314		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Selenium (Se)-Dissolved	0.000127		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	4.48		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Sodium (Na)-Dissolved	1.95		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0402		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.62		0.50	mg/L	20-NOV-19	22-NOV-19	R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000055		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.00353		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-17 WG-56484-191119-NT-17 Sampled By: N. Turl on 19-NOV-19 @ 14:15 Matrix: Water							
* Refer to Referenced Information for Qualifiers (if any) and	L N A - (lo - ol - lo - ou -					l	

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-17 WG-56484-191119-NT-17 Sampled By: N. Turl on 19-NOV-19 @ 14:15 Matrix: Water							
Physical Tests							
Conductivity	104		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	43.8		0.50	mg/L		22-NOV-19	
pH	7.88		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	101		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients				Ü			
Alkalinity, Bicarbonate (as CaCO3)	47.1		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	47.1		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	3.99		0.50	mg/L		21-NOV-19	R4920426
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920426
Nitrate and Nitrite (as N)	0.220		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.220		0.0050	mg/L		21-NOV-19	R4920426
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920426
Sulfate (SO4)	2.43		0.30	mg/L		21-NOV-19	R4920426
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0044		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00171		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00129		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000105		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	13.5		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00066		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Copper (Cu)-Dissolved	0.00027		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Magnesium (Mg)-Dissolved	2.42		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204
Molybdenum (Mo)-Dissolved	0.000065		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-17 WG-56484-191119-NT-17 Sampled By: N. Turl on 19-NOV-19 @ 14:15 Matrix: Water							
Dissolved Metals							
Potassium (K)-Dissolved	0.922		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.000215		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silicon (Si)-Dissolved	5.21		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Silver (Ag)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19		R4921598
Sodium (Na)-Dissolved	3.08		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Strontium (Sr)-Dissolved	0.0269		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Sulfur (S)-Dissolved	0.69		0.50	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Uranium (U)-Dissolved	0.000192		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	0.0160		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-18 WG-56484-191119-NT-18 Sampled By: N. Turl on 19-NOV-19 @ 14:35 Matrix: Water							
Physical Tests							
Conductivity	209		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	108		0.50	mg/L		22-NOV-19	
рН	8.02		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids	182		20	mg/L		21-NOV-19	R4921315
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	114		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	114		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	4.15		0.50	mg/L			R4920426
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920426
Nitrate and Nitrite (as N)	0.161		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.161		0.0050	mg/L		21-NOV-19	
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920426
Sulfate (SO4)	2.55		0.30	mg/L		21-NOV-19	R4920426
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	
Dissolved Metals Filtration Location	FIELD				00 1101	20-NOV-19	R4919103
Aluminum (Al)-Dissolved	0.0087		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385415-18 WG-56484-191119-NT-18 Sampled By: N. Turl on 19-NOV-19 @ 14:35 Matrix: Water							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Barium (Ba)-Dissolved	0.00402		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cadmium (Cd)-Dissolved	0.0000099		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Calcium (Ca)-Dissolved	33.4		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Chromium (Cr)-Dissolved	0.00095		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Copper (Cu)-Dissolved	0.00148		0.00020	mg/L	20-NOV-19	22-NOV-19	
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19		R4921598
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	
Magnesium (Mg)-Dissolved	5.91		0.0050	mg/L	20-NOV-19	22-NOV-19	
Manganese (Mn)-Dissolved	0.00303		0.00010	mg/L	20-NOV-19		R4921598
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	
Molybdenum (Mo)-Dissolved	0.000105		0.000050	mg/L	20-NOV-19	22-NOV-19	
Nickel (Ni)-Dissolved Phosphorus (P)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Potassium (K)-Dissolved	<0.050		0.050	mg/L	20-NOV-19 20-NOV-19	22-NOV-19 22-NOV-19	
Rubidium (Rb)-Dissolved	0.346		0.050 0.00020	mg/L mg/L	20-NOV-19		R4921598
Selenium (Se)-Dissolved	0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19 22-NOV-19	
Silicon (Si)-Dissolved	4.66		0.00030	mg/L	20-NOV-19		R4921598
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Sodium (Na)-Dissolved	3.58		0.050	mg/L	20-NOV-19	22-NOV-19	
Strontium (Sr)-Dissolved	0.0784		0.00020	mg/L	20-NOV-19	22-NOV-19	
Sulfur (S)-Dissolved	0.71		0.50	mg/L	20-NOV-19	22-NOV-19	
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	
Thallium (TI)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Tin (Sn)-Dissolved	0.00019		0.00010	mg/L	20-NOV-19	22-NOV-19	
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19	22-NOV-19	
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Uranium (U)-Dissolved	0.000321		0.000010	mg/L	20-NOV-19	22-NOV-19	
Vanadium (V)-Dissolved	0.00332		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598
Zinc (Zn)-Dissolved	0.0032		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598
L2385415-19 WG-56484-191119-NT-19 Sampled By: N. Turl on 19-NOV-19 @ 14:30 Matrix: Water * Refer to Referenced Information for Qualifiers (if appl) on				·			

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch	
L2385415-19 WG-56484-191119-NT-19 Sampled By: N. Turl on 19-NOV-19 @ 14:30 Matrix: Water								
Physical Tests								
Conductivity	<2.0		2.0	uS/cm		21-NOV-19	R4920107	
Hardness (as CaCO3), dissolved	<0.50		0.50	mg/L		26-NOV-19		
pH	5.60		0.10	рН		21-NOV-19	R4920107	
Total Dissolved Solids	<10		10	mg/L		21-NOV-19	R4921315	
Anions and Nutrients								
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107	
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107	
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107	
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107	
Ammonia, Total (as N)	< 0.0050		0.0050	mg/L		21-NOV-19	R4921471	
Chloride (CI)	<0.50		0.50	mg/L		21-NOV-19	R4920426	
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920426	
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		22-NOV-19		
Nitrate (as N)	< 0.0050		0.0050	mg/L		21-NOV-19	R4920426	
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920426	
Sulfate (SO4)	< 0.30		0.30	mg/L		21-NOV-19	R4920426	
Dissolved Metals								
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919894	
Dissolved Metals Filtration Location	FIELD					23-NOV-19	R4921724	
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Bismuth (Bi)-Dissolved	< 0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598	
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Cadmium (Cd)-Dissolved	0.0000068	RRV	0.0000050	mg/L	23-NOV-19	24-NOV-19	R4922879	
Calcium (Ca)-Dissolved	< 0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921598	
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Copper (Cu)-Dissolved	0.00097	RRV	0.00020	mg/L	23-NOV-19	24-NOV-19	R4922879	
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Lead (Pb)-Dissolved	<0.00050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598	
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921598	
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921598	
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-19	22-NOV-19	R4920204	
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921598	
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921598	
. ,			0.050	mg/L	20-NOV-19	22-NOV-19	R4921598	

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

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L2385415-19 WG-56484-191119-NT-19 Sampled By: N. Turl on 19-NOV-19 @ 14:30 Matrix: Water Dissolved Metals Potassium (K)-Dissolved Rubidium (Rb)-Dissolved Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.050 <0.00020 <0.000050 <0.050 <0.00010 <0.050 <0.00020 <0.50		0.050 0.00020 0.000050 0.050 0.000010	mg/L mg/L mg/L mg/L	20-NOV-19 20-NOV-19 20-NOV-19	22-NOV-19	R4921598 R4921598
Dissolved Metals Potassium (K)-Dissolved Rubidium (Rb)-Dissolved Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.00020 <0.000050 <0.050 <0.000010 <0.050 <0.00020		0.00020 0.000050 0.050	mg/L mg/L	20-NOV-19	22-NOV-19	
Potassium (K)-Dissolved Rubidium (Rb)-Dissolved Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.00020 <0.000050 <0.050 <0.000010 <0.050 <0.00020		0.00020 0.000050 0.050	mg/L mg/L	20-NOV-19	22-NOV-19	
Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.00020 <0.000050 <0.050 <0.000010 <0.050 <0.00020		0.00020 0.000050 0.050	mg/L mg/L	20-NOV-19	22-NOV-19	
Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.000050 <0.050 <0.000010 <0.050 <0.00020		0.000050 0.050	mg/L			
Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.050 <0.000010 <0.050 <0.00020		0.050			22-NOV-19	R4921598
Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.000010 <0.050 <0.00020				20-NOV-19		R4921598
Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.050 <0.00020			mg/L	20-NOV-19		R4921598
Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved	<0.00020		0.050	mg/L	20-NOV-19		R4921598
Sulfur (S)-Dissolved Tellurium (Te)-Dissolved			0.00020	mg/L	20-NOV-19		R4921598
Tellurium (Te)-Dissolved			0.50	mg/L	20-NOV-19		R4921598
	<0.00020		0.00020	mg/L	20-NOV-19		R4921598
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19		R4921598
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Tin (Sn)-Dissolved	0.00021	RRV	0.00010	mg/L	23-NOV-19		R4922879
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	20-NOV-19		R4921598
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19		R4921598
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921598
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19		R4921598
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19		R4921598
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921598

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2385415-1, -10, -11, -12, -13, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2385415-14
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2385415-1, -10, -11, -12, -13, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2385415-14
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2385415-1, -10, -11, -12, -13, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2385415-14
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2385415-1, -10, -11, -12, -13, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2385415-14

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0 (Calculation)

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Only)

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-D-CALC-VA Water Hardness (as CaCO3), dissolved APHA 2340B

"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod) or CVAFS

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod) ICPMS

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

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Reference Information

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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

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

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

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

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH clastical

electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

Gravimetric

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.

** 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

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2385415 Report Date: 27-NOV-19 Page 1 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
	Water 20107							
WG3224172-4 Alkalinity, Total (a	DUP as CaCO3)	L2383859-1 6.5	6.5		mg/L	0.0	20	21-NOV-19
WG3224185-4 Alkalinity, Total (a	DUP as CaCO3)	L2385166-2 46.3	46.7		mg/L	0.9	20	21-NOV-19
WG3224172-3 Alkalinity, Total (a	LCS as CaCO3)		102.2		%		85-115	21-NOV-19
WG3224185-3 Alkalinity, Total (a	LCS as CaCO3)		101.3		%		85-115	21-NOV-19
WG3224172-1 Alkalinity, Total (a	MB as CaCO3)		<1.0		mg/L		1	21-NOV-19
WG3224185-1 Alkalinity, Total (a	MB as CaCO3)		<1.0		mg/L		1	21-NOV-19
CL-IC-N-VA	Water							
Batch R492	20286							
WG3224176-3 Chloride (CI)	DUP	L2385415-1 1.20	1.18		mg/L	1.2	20	21-NOV-19
WG3224176-2 Chloride (CI)	LCS		102.3		%		90-110	21-NOV-19
WG3224176-1 Chloride (CI)	МВ		<0.50		mg/L		0.5	21-NOV-19
WG3224176-4 Chloride (CI)	MS	L2385415-2	100.5		%		75-125	21-NOV-19
Batch R492	20426							
WG3224204-3 Chloride (CI)	DUP	L2385415-16 10.0	10.0		mg/L	0.1	20	21-NOV-19
WG3224204-2 Chloride (CI)	LCS		101.1		%		90-110	21-NOV-19
WG3224204-1 Chloride (CI)	МВ		<0.50		mg/L		0.5	21-NOV-19
WG3224204-4 Chloride (CI)	MS	L2385488-1	100.6		%		75-125	21-NOV-19
EC-PCT-VA	Water							
Batch R492	20107							
WG3224172-4 Conductivity	DUP	L2383859-1 955	947		uS/cm	0.8	10	21-NOV-19
WG3224185-4 Conductivity	DUP	L2385166-2 197	201		uS/cm	1.8	10	21-NOV-19
WG3224172-3	LCS							



Workorder: L2385415 Report Date: 27-NOV-19 Page 2 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-PCT-VA		Water							
Batch R4 WG3224172-3 Conductivity	4920107 LCS			98.0		%		90-110	21-NOV-19
WG3224185-3 Conductivity	LCS			96.9		%		90-110	21-NOV-19
WG3224172-1 Conductivity	MB			<2.0		uS/cm		2	21-NOV-19
WG3224185-1 Conductivity	МВ			<2.0		uS/cm		2	21-NOV-19
F-IC-N-VA		Water							
Batch R4	1920286								
WG3224176-3 Fluoride (F)	DUP		L2385415-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224176-2 Fluoride (F)	LCS			100.7		%		90-110	21-NOV-19
WG3224176-1 Fluoride (F)	MB			<0.020		mg/L		0.02	21-NOV-19
WG3224176-4 Fluoride (F)	MS		L2385415-2	101.4		%		75-125	21-NOV-19
Batch R4	1920426								
WG3224204-3 Fluoride (F)	DUP		L2385415-16 <0.020	<0.020	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224204-2 Fluoride (F)	LCS			101.5		%		90-110	21-NOV-19
WG3224204-1 Fluoride (F)	MB			<0.020		mg/L		0.02	21-NOV-19
WG3224204-4 Fluoride (F)	MS		L2385488-1	100.5		%		75-125	21-NOV-19
HG-D-CVAA-VA		Water							
Batch R4	1920204								
WG3225020-11 Mercury (Hg)-D			L2385415-2 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-NOV-19
WG3225020-15 Mercury (Hg)-D			L2385557-2 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-NOV-19
WG3225020-10 Mercury (Hg)-D				98.4		%		80-120	22-NOV-19
WG3225020-14 Mercury (Hg)-D				97.7		%		80-120	22-NOV-19
WG3225020-13	МВ								



Workorder: L2385415 Report Date: 27-NOV-19 Page 3 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4920204								
WG3225020-13 MB Mercury (Hg)-Dissolved			<0.000005	C	mg/L		0.000005	22-NOV-19
WG3225020-9 MB					J			22 110 7 10
Mercury (Hg)-Dissolved			<0.000005	C	mg/L		0.000005	22-NOV-19
WG3225020-12 MS Mercury (Hg)-Dissolved		L2385415-1	101.0		%		70-130	22-NOV-19
WG3225020-16 MS		L2385557-1	101.0		70		70-130	22-1100-19
Mercury (Hg)-Dissolved		LEGOCOCT	95.0		%		70-130	22-NOV-19
MET-D-CCMS-VA	Water							
Batch R4919320								
WG3224243-3 DUP Aluminum (Al)-Dissolved	ſ	L2385111-3 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
Antimony (Sb)-Dissolved		0.00027	0.00028		mg/L	2.2	20	21-NOV-19
Arsenic (As)-Dissolved		0.00018	0.00019		mg/L	5.6	20	21-NOV-19
Barium (Ba)-Dissolved		0.321	0.327		mg/L	2.0	20	21-NOV-19
Beryllium (Be)-Dissolved	I	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-NOV-19
Boron (B)-Dissolved		0.018	0.019		mg/L	6.2	20	21-NOV-19
Cadmium (Cd)-Dissolved	d	0.0000287	0.0000369	J	mg/L	0.0000082	0.00001	21-NOV-19
Calcium (Ca)-Dissolved		144	150		mg/L	3.7	20	21-NOV-19
Cesium (Cs)-Dissolved		0.000021	0.000023		mg/L	7.5	20	21-NOV-19
Chromium (Cr)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Copper (Cu)-Dissolved		0.0110	0.0110		mg/L	0.1	20	21-NOV-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-NOV-19
Lead (Pb)-Dissolved		0.000053	0.000051		mg/L	3.8	20	21-NOV-19
Lithium (Li)-Dissolved		0.0052	0.0055		mg/L	6.4	20	21-NOV-19
Magnesium (Mg)-Dissolv	ved	67.8	68.2		mg/L	0.5	20	21-NOV-19
Manganese (Mn)-Dissolv	ved	0.00484	0.00483		mg/L	0.2	20	21-NOV-19
Molybdenum (Mo)-Disso	lved	0.000380	0.000393		mg/L	3.4	20	21-NOV-19
Nickel (Ni)-Dissolved		0.00087	0.00084		mg/L	3.0	20	21-NOV-19
Phosphorus (P)-Dissolve	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-NOV-19
Potassium (K)-Dissolved	i	1.65	1.61		mg/L	2.3	20	21-NOV-19
Rubidium (Rb)-Dissolved	d	0.00061	0.00077	J	mg/L	0.00017	0.0004	21-NOV-19
Selenium (Se)-Dissolved	d	0.000245	0.000211		mg/L	15	20	21-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4919320								
WG3224243-3 DUP Silicon (Si)-Dissolved		L2385111-3	7.00		a/I	0.0	20	
		6.87	7.08	DDD MA	mg/L	3.0	20	21-NOV-19
Silver (Ag)-Dissolved Sodium (Na)-Dissolved		<0.000010 160	<0.000010 161	RPD-NA	mg/L	N/A	20	21-NOV-19
` '	4				mg/L	0.7	20	21-NOV-19
Strontium (Sr)-Dissolved	ı	1.21	1.17		mg/L	3.2	20	21-NOV-19
Sulfur (S)-Dissolved	4	7.12	6.64	DDD MA	mg/L	7.0	20	21-NOV-19
Tellurium (Te)-Dissolved	J	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Thallium (TI)-Dissolved		<0.000010	0.000011	RPD-NA	mg/L	N/A	20	21-NOV-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	21-NOV-19
Tungsten (W)-Dissolved	1	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Uranium (U)-Dissolved		0.00197	0.00199		mg/L	1.1	20	21-NOV-19
Vanadium (V)-Dissolved	i	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-NOV-19
Zinc (Zn)-Dissolved		0.0330	0.0335		mg/L	1.5	20	21-NOV-19
Zirconium (Zr)-Dissolved	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224243-2 LCS Aluminum (AI)-Dissolved	4		102.7		%		00.400	24 NOV 40
Antimony (Sb)-Dissolved			93.6		%		80-120	21-NOV-19
Arsenic (As)-Dissolved	u		99.5		%		80-120	21-NOV-19
Barium (Ba)-Dissolved			99.5		%		80-120	21-NOV-19
Beryllium (Be)-Dissolved	4		98.8		%		80-120	21-NOV-19
Bismuth (Bi)-Dissolved	J		101.3		%		80-120	21-NOV-19
Boron (B)-Dissolved			98.1		%		80-120 80-120	21-NOV-19 21-NOV-19
Cadmium (Cd)-Dissolve	·d		99.9		%		80-120	21-NOV-19 21-NOV-19
Calcium (Ca)-Dissolved			98.5		%		80-120	21-NOV-19 21-NOV-19
Cesium (Cs)-Dissolved			96.9		%		80-120	21-NOV-19 21-NOV-19
Chromium (Cr)-Dissolve	ed		103.6		%		80-120	21-NOV-19 21-NOV-19
Cobalt (Co)-Dissolved	· •		99.97		%		80-120	21-NOV-19 21-NOV-19
Copper (Cu)-Dissolved			98.0		%		80-120	21-NOV-19 21-NOV-19
Iron (Fe)-Dissolved			96.5		%		80-120	21-NOV-19 21-NOV-19
Lead (Pb)-Dissolved			102.7		%		80-120	21-NOV-19 21-NOV-19
Lithium (Li)-Dissolved			96.4		%		80-120	21-NOV-19 21-NOV-19
Magnesium (Mg)-Dissol	ved		99.3		%		80-120	21-NOV-19 21-NOV-19
magnoorani (mg) Dissoi			00.0		,,		00-120	Z 1-140 V-13



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Client: GHD Limited

400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R491932	20							
WG3224243-2 LCS Manganese (Mn)-Diss			105.4		%		00.400	04 NOV 40
-					%		80-120	21-NOV-19
Molybdenum (Mo)-Dis Nickel (Ni)-Dissolved	ssoiveu		103.9 99.7		%		80-120	21-NOV-19
Phosphorus (P)-Dissolved	alvod		103.5		%		80-120	21-NOV-19
Priospriorus (P)-Dissol			103.5		%		70-130	21-NOV-19
()					%		80-120	21-NOV-19
Rubidium (Rb)-Dissol			103.6				80-120	21-NOV-19
Selenium (Se)-Dissol	vea		100.9 106.2		%		80-120	21-NOV-19
Silicon (Si)-Dissolved			106.2		%		60-140	21-NOV-19
Silver (Ag)-Dissolved					%		80-120	21-NOV-19
Sodium (Na)-Dissolve			101.8		%		80-120	21-NOV-19
Strontium (Sr)-Dissolv	/eu		100.4		%		80-120	21-NOV-19
Sulfur (S)-Dissolved	, a d		89.7		%		80-120	21-NOV-19
Tellurium (Te)-Dissolv			101.9		%		80-120	21-NOV-19
Thallium (TI)-Dissolve			102.3		%		80-120	21-NOV-19
Thorium (Th)-Dissolved	eu		96.8		%		80-120	21-NOV-19
Tin (Sn)-Dissolved	٠. ا		101.2		%		80-120	21-NOV-19
Titanium (Ti)-Dissolve			95.6		%		80-120	21-NOV-19
Tungsten (W)-Dissolv			102.7		%		80-120	21-NOV-19
Uranium (U)-Dissolve			101.9		%		80-120	21-NOV-19
Vanadium (V)-Dissolv	⁄ea		103.2		%		80-120	21-NOV-19
Zinc (Zn)-Dissolved			96.9		%		80-120	21-NOV-19
Zirconium (Zr)-Dissol	ved		103.6		%		80-120	21-NOV-19
WG3224243-1 MB Aluminum (Al)-Dissol	ved		<0.0010		mg/L		0.001	21-NOV-19
Antimony (Sb)-Dissol			<0.00010		mg/L		0.0001	21-NOV-19
Arsenic (As)-Dissolve			<0.00010		mg/L		0.0001	21-NOV-19
Barium (Ba)-Dissolve			<0.00010		mg/L		0.0001	21-NOV-19
Beryllium (Be)-Dissolv			<0.00010		mg/L		0.0001	21-NOV-19
Bismuth (Bi)-Dissolve			<0.00005		mg/L		0.00005	21-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-NOV-19
Cadmium (Cd)-Dissol	ved		<0.00000	5C	mg/L		0.000005	21-NOV-19
Calcium (Ca)-Dissolv			<0.050		mg/L		0.05	21-NOV-19
Cesium (Cs)-Dissolve			<0.00001	0	mg/L		0.00001	21-NOV-19
Chromium (Cr)-Disso			<0.00010		mg/L		0.0001	21-NOV-19
· · · · · · · · · · · · · · · · ·	-				<i>3</i> –			



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Client: GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R491932	0							
WG3224243-1 MB			-0.00010		ma/l		0.0001	04 NOV 40
Cobalt (Co)-Dissolved	1		<0.00010		mg/L		0.0001	21-NOV-19
Copper (Cu)-Dissolved	l		<0.00020		mg/L			21-NOV-19
Iron (Fe)-Dissolved			<0.010	`	mg/L		0.01	21-NOV-19
Lead (Pb)-Dissolved Lithium (Li)-Dissolved			<0.000050)	mg/L		0.00005	21-NOV-19
` '	alvo d		<0.0010		mg/L		0.001	21-NOV-19
Magnesium (Mg)-Diss			<0.0050		mg/L		0.005	21-NOV-19
Manganese (Mn)-Diss			<0.00010		mg/L		0.0001	21-NOV-19
Molybdenum (Mo)-Diss	soivea		<0.000050	J	mg/L		0.00005	21-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-NOV-19
Phosphorus (P)-Dissol			<0.050		mg/L		0.05	21-NOV-19
Potassium (K)-Dissolv			<0.050		mg/L		0.05	21-NOV-19
Rubidium (Rb)-Dissolv			<0.00020		mg/L		0.0002	21-NOV-19
Selenium (Se)-Dissolv	ed		<0.000050)	mg/L		0.00005	21-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-NOV-19
Silver (Ag)-Dissolved			<0.000010)	mg/L		0.00001	21-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-NOV-19
Strontium (Sr)-Dissolve	ed		<0.00020		mg/L		0.0002	21-NOV-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	21-NOV-19
Tellurium (Te)-Dissolve			<0.00020		mg/L		0.0002	21-NOV-19
Thallium (TI)-Dissolved	d		<0.000010)	mg/L		0.00001	21-NOV-19
Thorium (Th)-Dissolve	d		<0.00010		mg/L		0.0001	21-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-19
Titanium (Ti)-Dissolved	d		<0.00030		mg/L		0.0003	21-NOV-19
Tungsten (W)-Dissolve	ed		<0.00010		mg/L		0.0001	21-NOV-19
Uranium (U)-Dissolved	d		<0.000010)	mg/L		0.00001	21-NOV-19
Vanadium (V)-Dissolve	ed		<0.00050		mg/L		0.0005	21-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-NOV-19
Zirconium (Zr)-Dissolv	ed		<0.00020		mg/L		0.0002	21-NOV-19
WG3224243-4 MS Aluminum (Al)-Dissolv	ed	L2385415-14	101.4		%		70-130	21-NOV-19
Antimony (Sb)-Dissolv	ed		100.8		%		70-130	21-NOV-19
Arsenic (As)-Dissolved	i		102.1		%		70-130	21-NOV-19
Barium (Ba)-Dissolved	l		97.3		%		70-130	21-NOV-19
Beryllium (Be)-Dissolve	ed		105.1		%		70-130	21-NOV-19



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Client: GHD Limited

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Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4919320							
WG3224243-4 MS	L2385415-14	05.4		0/			
Bismuth (Bi)-Dissolved		95.4		%		70-130	21-NOV-19
Boron (B)-Dissolved		103.3		%		70-130	21-NOV-19
Cadmium (Cd)-Dissolved		103.9		%		70-130	21-NOV-19
Calcium (Ca)-Dissolved		N/A	MS-B	%		-	21-NOV-19
Cesium (Cs)-Dissolved		99.3		%		70-130	21-NOV-19
Chromium (Cr)-Dissolved		103.1		%		70-130	21-NOV-19
Cobalt (Co)-Dissolved		101.3		%		70-130	21-NOV-19
Copper (Cu)-Dissolved		99.0		%		70-130	21-NOV-19
Iron (Fe)-Dissolved		99.0		%		70-130	21-NOV-19
Lead (Pb)-Dissolved		101.9		%		70-130	21-NOV-19
Lithium (Li)-Dissolved		105.1		%		70-130	21-NOV-19
Magnesium (Mg)-Dissolved		N/A	MS-B	%		-	21-NOV-19
Manganese (Mn)-Dissolved		104.3		%		70-130	21-NOV-19
Molybdenum (Mo)-Dissolved		100.4		%		70-130	21-NOV-19
Nickel (Ni)-Dissolved		100.5		%		70-130	21-NOV-19
Phosphorus (P)-Dissolved		104.2		%		70-130	21-NOV-19
Potassium (K)-Dissolved		106.6		%		70-130	21-NOV-19
Rubidium (Rb)-Dissolved		109.8		%		70-130	21-NOV-19
Selenium (Se)-Dissolved		108.4		%		70-130	21-NOV-19
Silicon (Si)-Dissolved		98.5		%		70-130	21-NOV-19
Silver (Ag)-Dissolved		103.8		%		70-130	21-NOV-19
Sodium (Na)-Dissolved		N/A	MS-B	%		-	21-NOV-19
Strontium (Sr)-Dissolved		N/A	MS-B	%		-	21-NOV-19
Sulfur (S)-Dissolved		106.3		%		70-130	21-NOV-19
Tellurium (Te)-Dissolved		102.3		%		70-130	21-NOV-19
Thallium (TI)-Dissolved		100.1		%		70-130	21-NOV-19
Thorium (Th)-Dissolved		105.2		%		70-130	21-NOV-19
Tin (Sn)-Dissolved		102.3		%		70-130	21-NOV-19
Titanium (Ti)-Dissolved		97.8		%		70-130	21-NOV-19
Tungsten (W)-Dissolved		104.3		%		70-130	21-NOV-19
Uranium (U)-Dissolved		101.8		%		70-130	21-NOV-19
Vanadium (V)-Dissolved		104.2		%		70-130	21-NOV-19
Zinc (Zn)-Dissolved		100.9		%		70-130	21-NOV-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4919320 WG3224243-4 MS Zirconium (Zr)-Dissolve		L2385415-14	101.9		%		70-130	21-NOV-19
Batch R4921598 WG3224124-3 DUP Aluminum (Al)-Dissolve		L2385415-1 0.0020	0.0016		mg/L	20	20	22-NOV-19
Antimony (Sb)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Barium (Ba)-Dissolved		0.00224	0.00234		mg/L	4.4	20	22-NOV-19
Beryllium (Be)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-NOV-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-NOV-19
Cadmium (Cd)-Dissolve	ed	<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-NOV-19
Calcium (Ca)-Dissolved	d	16.7	16.5		mg/L	1.0	20	22-NOV-19
Cesium (Cs)-Dissolved		<0.00010	<0.000010	RPD-NA	mg/L	N/A	20	22-NOV-19
Chromium (Cr)-Dissolv	ed	0.00019	0.00019		mg/L	0.3	20	22-NOV-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Copper (Cu)-Dissolved		0.00033	0.00032		mg/L	2.1	20	22-NOV-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-NOV-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-NOV-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-NOV-19
Magnesium (Mg)-Disso	olved	2.56	2.36		mg/L	8.4	20	22-NOV-19
Manganese (Mn)-Disso	olved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Molybdenum (Mo)-Diss	solved	0.000081	0.000074		mg/L	8.6	20	22-NOV-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-NOV-19
Phosphorus (P)-Dissolv	ved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-NOV-19
Potassium (K)-Dissolve	ed	0.145	0.141		mg/L	2.9	20	22-NOV-19
Rubidium (Rb)-Dissolve	ed	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-NOV-19
Selenium (Se)-Dissolve	ed	0.000123	0.000142		mg/L	14	20	22-NOV-19
Silicon (Si)-Dissolved		3.45	3.33		mg/L	3.4	20	22-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-NOV-19
Sodium (Na)-Dissolved		1.27	1.22		mg/L	3.6	20	22-NOV-19
Strontium (Sr)-Dissolve	ed	0.0252	0.0247		mg/L	2.0	20	22-NOV-19
Sulfur (S)-Dissolved		0.69	0.71		mg/L	3.3	20	22-NOV-19



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Metro-DCMS-VA Water	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3224124-3 DUP Tellurium (Te)-Dissolved	MET-D-CCMS-VA	Water							
Tellurium (Te)-Dissolved	Batch R4921598								
Thellium (TI)-Dissolved				0.00000	DDD 114	a/I	N1/A	00	
Thorium (Th)-Dissolved	, ,								
Tin (Sn)-Dissolved	` ,				=				
Titanium (Tr)-Dissolved <0.00030 <0.00030 RPD-NA mg/L N/A 20 22-NOV-19 Tungsten (W)-Dissolved <0.00010	` ,								
Tungsten (W)-Dissolved	` '								
Uranium (U)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 22-NOV-19 Vanadium (V)-Dissolved 0.00097 0.00094 mg/L 3.3 20 22-NOV-19 Zinc (Zn)-Dissolved <0.0010	, ,								
Vanadium (V)-Dissolved 0.00097 0.00094 mg/L 3.3 20 22-NOV-19 Zinc (Zn)-Dissolved <0.0010	3 ()								22-NOV-19
Zinc (Zn)-Dissolved <0.0010 <0.0010 RPD-NA mg/L N/A 20 22-NOV-19 Zirconium (Zi)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 22-NOV-19 WG3224124-2 LCS Aluminum (Al)-Dissolved 97.5 % 80-120 22-NOV-19 Antimony (Sb)-Dissolved 89.5 % 80-120 22-NOV-19 Arsenic (As)-Dissolved 95.0 % 80-120 22-NOV-19 Barium (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Casum (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved	` ,				RPD-NA				22-NOV-19
Zirconium (Zr)-Dissolved <0.00020 RPD-NA mg/L N/A 20 22-NOV-19 WG3224124-2 LCS Aluminum (Al)-Dissolved 97.5 % 80-120 22-NOV-19 Antimony (Sb)-Dissolved 89.5 % 80-120 22-NOV-19 Arsenic (As)-Dissolved 95.0 % 80-120 22-NOV-19 Barium (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 99.2 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 92.5 % 80-120 22-NOV-19	` ,		0.00097	0.00094		mg/L	3.3	20	22-NOV-19
WG3224124-2 LCS Aluminum (Al)-Dissolved 97.5 % 80-120 22-NOV-19 Antimony (Sb)-Dissolved 89.5 % 80-120 22-NOV-19 Arsenic (As)-Dissolved 95.0 % 80-120 22-NOV-19 Barylim (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 92.5 % 80-120 22-NOV-19 Copper (Cu)-Dissolved <td>Zinc (Zn)-Dissolved</td> <td></td> <td><0.0010</td> <td><0.0010</td> <td>RPD-NA</td> <td>mg/L</td> <td>N/A</td> <td>20</td> <td>22-NOV-19</td>	Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-NOV-19
Aluminum (Al)-Dissolved 97.5 % 80-120 22-NOV-19 Antimony (Sb)-Dissolved 89.5 % 80-120 22-NOV-19 Arsenic (As)-Dissolved 95.0 % 80-120 22-NOV-19 Barlum (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Cesium (Ca)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 </td <td>Zirconium (Zr)-Dissolved</td> <td></td> <td><0.00020</td> <td><0.00020</td> <td>RPD-NA</td> <td>mg/L</td> <td>N/A</td> <td>20</td> <td>22-NOV-19</td>	Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-NOV-19
Arsenic (As)-Dissolved 95.0 % 80-120 22-NOV-19 Barium (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 94.3 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19				97.5		%		80-120	22-NOV-19
Barium (Ba)-Dissolved 97.3 % 80-120 22-NOV-19 Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 93.1 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 94.3 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Antimony (Sb)-Dissolved			89.5		%		80-120	22-NOV-19
Beryllium (Be)-Dissolved 92.3 % 80-120 22-NOV-19 Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Manganesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 </td <td>Arsenic (As)-Dissolved</td> <td></td> <td></td> <td>95.0</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>22-NOV-19</td>	Arsenic (As)-Dissolved			95.0		%		80-120	22-NOV-19
Bismuth (Bi)-Dissolved 90.9 % 80-120 22-NOV-19 Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 <td>Barium (Ba)-Dissolved</td> <td></td> <td></td> <td>97.3</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>22-NOV-19</td>	Barium (Ba)-Dissolved			97.3		%		80-120	22-NOV-19
Boron (B)-Dissolved 97.9 % 80-120 22-NOV-19 Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % </td <td>Beryllium (Be)-Dissolved</td> <td></td> <td></td> <td>92.3</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>22-NOV-19</td>	Beryllium (Be)-Dissolved			92.3		%		80-120	22-NOV-19
Cadmium (Cd)-Dissolved 99.0 % 80-120 22-NOV-19 Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Bismuth (Bi)-Dissolved			90.9		%		80-120	22-NOV-19
Calcium (Ca)-Dissolved 90.2 % 80-120 22-NOV-19 Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Boron (B)-Dissolved			97.9		%		80-120	22-NOV-19
Cesium (Cs)-Dissolved 94.8 % 80-120 22-NOV-19 Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Cadmium (Cd)-Dissolved	d		99.0		%		80-120	22-NOV-19
Chromium (Cr)-Dissolved 98.1 % 80-120 22-NOV-19 Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Calcium (Ca)-Dissolved			90.2		%		80-120	22-NOV-19
Cobalt (Co)-Dissolved 92.9 % 80-120 22-NOV-19 Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Cesium (Cs)-Dissolved			94.8		%		80-120	22-NOV-19
Copper (Cu)-Dissolved 92.5 % 80-120 22-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Chromium (Cr)-Dissolved	d		98.1		%		80-120	22-NOV-19
Iron (Fe)-Dissolved 96.4 % 80-120 22-NOV-19 Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Cobalt (Co)-Dissolved			92.9		%		80-120	22-NOV-19
Lead (Pb)-Dissolved 93.1 % 80-120 22-NOV-19 Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Copper (Cu)-Dissolved			92.5		%		80-120	22-NOV-19
Lithium (Li)-Dissolved 90.3 % 80-120 22-NOV-19 Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Iron (Fe)-Dissolved			96.4		%		80-120	22-NOV-19
Magnesium (Mg)-Dissolved 94.0 % 80-120 22-NOV-19 Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Lead (Pb)-Dissolved			93.1		%		80-120	22-NOV-19
Manganese (Mn)-Dissolved 97.1 % 80-120 22-NOV-19 Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Lithium (Li)-Dissolved			90.3		%		80-120	22-NOV-19
Molybdenum (Mo)-Dissolved 94.3 % 80-120 22-NOV-19 Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Magnesium (Mg)-Dissolv	red		94.0		%		80-120	22-NOV-19
Nickel (Ni)-Dissolved 94.3 % 80-120 22-NOV-19 Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Manganese (Mn)-Dissolv	red		97.1		%		80-120	22-NOV-19
Phosphorus (P)-Dissolved 99.1 % 70-130 22-NOV-19	Molybdenum (Mo)-Dissol	lved		94.3		%		80-120	22-NOV-19
	Nickel (Ni)-Dissolved			94.3		%		80-120	22-NOV-19
Potassium (K)-Dissolved 94.1 % 80-120 22-NOV-19	Phosphorus (P)-Dissolve	d		99.1		%		70-130	22-NOV-19
	Potassium (K)-Dissolved			94.1		%		80-120	22-NOV-19



Workorder: L2385415 Report Date: 27-NOV-19 Page 10 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4921598								
WG3224124-2 LCS Rubidium (Rb)-Dissolved	1		97.5		%		00.400	00 1101/ 40
Selenium (Se)-Dissolved			97.5 101.6		%		80-120	22-NOV-19
Silicon (Si)-Dissolved			100.1		%		80-120	22-NOV-19
Silver (Ag)-Dissolved			93.7		%		60-140	22-NOV-19
Sodium (Na)-Dissolved			101.3		%		80-120	22-NOV-19
Strontium (Sr)-Dissolved			96.3		%		80-120 80-120	22-NOV-19
Sulfur (S)-Dissolved			98.4		%			22-NOV-19
Tellurium (Te)-Dissolved			92.3		%		80-120	22-NOV-19
Thallium (TI)-Dissolved			92.3		%		80-120	22-NOV-19
Thorium (Th)-Dissolved			87.4		%		80-120	22-NOV-19
Tin (Sn)-Dissolved			93.3		%		80-120	22-NOV-19
Titanium (Ti)-Dissolved			93.3		%		80-120	22-NOV-19
Tungsten (W)-Dissolved			93.3		%		80-120	22-NOV-19
Uranium (U)-Dissolved			97.5		%		80-120	22-NOV-19
Vanadium (V)-Dissolved			98.0		%		80-120	22-NOV-19
Zinc (Zn)-Dissolved			94.7		%		80-120 80-120	22-NOV-19
Zirconium (Zr)-Dissolved			96.1		%		80-120	22-NOV-19
WG3224124-1 MB			30.1		70		00-120	22-NOV-19
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Bismuth (Bi)-Dissolved			<0.00005	0	mg/L		0.00005	22-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-NOV-19
Cadmium (Cd)-Dissolved	d		<0.00000	50	mg/L		0.000005	22-NOV-19
Calcium (Ca)-Dissolved			< 0.050		mg/L		0.05	22-NOV-19
Cesium (Cs)-Dissolved			<0.00001	0	mg/L		0.00001	22-NOV-19
Chromium (Cr)-Dissolved	d		<0.00010		mg/L		0.0001	22-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-NOV-19
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	22-NOV-19



Workorder: L2385415 Report Date: 27-NOV-19 Page 11 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R49215	98							
WG3224124-1 MB Magnesium (Mg)-Dis			<0.0050		ma/l		0.005	00 NOV 40
					mg/L			22-NOV-19
Manganese (Mn)-Dis			<0.00010	`	mg/L		0.0001	22-NOV-19
Molybdenum (Mo)-Di			<0.000050)	mg/L		0.00005	22-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-NOV-19
Phosphorus (P)-Diss			<0.050		mg/L		0.05	22-NOV-19
Potassium (K)-Disso			<0.050		mg/L		0.05	22-NOV-19
Rubidium (Rb)-Disso			<0.00020		mg/L		0.0002	22-NOV-19
Selenium (Se)-Disso			<0.000050	J	mg/L		0.00005	22-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-NOV-19
Silver (Ag)-Dissolved			<0.000010)	mg/L		0.00001	22-NOV-19
Sodium (Na)-Dissolv			<0.050		mg/L		0.05	22-NOV-19
Strontium (Sr)-Dissol	vea		<0.00020		mg/L		0.0002	22-NOV-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	22-NOV-19
Tellurium (Te)-Dissol			<0.00020		mg/L		0.0002	22-NOV-19
Thallium (TI)-Dissolv			<0.000010)	mg/L		0.00001	22-NOV-19
Thorium (Th)-Dissolv	rea .		<0.00010		mg/L		0.0001	22-NOV-19
Tin (Sn)-Dissolved	1		<0.00010		mg/L		0.0001	22-NOV-19
Titanium (Ti)-Dissolv			<0.00030		mg/L		0.0003	22-NOV-19
Tungsten (W)-Dissol			<0.00010		mg/L		0.0001	22-NOV-19
Uranium (U)-Dissolve			<0.000010)	mg/L		0.00001	22-NOV-19
Vanadium (V)-Dissol	ved		<0.00050		mg/L		0.0005	22-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-NOV-19
Zirconium (Zr)-Disso			<0.00020		mg/L		0.0002	22-NOV-19
WG3224124-4 MS Aluminum (Al)-Disso		L2385415-2	95.5		%		70-130	22-NOV-19
Antimony (Sb)-Disso	lved		95.2		%		70-130	22-NOV-19
Arsenic (As)-Dissolve	ed		98.8		%		70-130	22-NOV-19
Barium (Ba)-Dissolve			95.6		%		70-130	22-NOV-19
Beryllium (Be)-Dissol			96.2		%		70-130	22-NOV-19
Bismuth (Bi)-Dissolve			92.1		%		70-130	22-NOV-19
Boron (B)-Dissolved			92.8		%		70-130	22-NOV-19
Cadmium (Cd)-Disso	lved		97.6		%		70-130	22-NOV-19
Calcium (Ca)-Dissolv	ved .		N/A	MS-B	%		-	22-NOV-19
Cesium (Cs)-Dissolv			98.6		%		70-130	22-NOV-19
, ,								-



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4921	598							
WG3224124-4 MS		L2385415-2	00.0		0/			
Chromium (Cr)-Diss			98.2		%		70-130	22-NOV-19
Cobalt (Co)-Dissolv			94.7		%		70-130	22-NOV-19
Copper (Cu)-Dissol	vea		94.6		%		70-130	22-NOV-19
Iron (Fe)-Dissolved			97.5		%		70-130	22-NOV-19
Lead (Pb)-Dissolved			94.4		%		70-130	22-NOV-19
Lithium (Li)-Dissolve			103.2		%		70-130	22-NOV-19
Magnesium (Mg)-Di			N/A	MS-B	%		-	22-NOV-19
Manganese (Mn)-D			95.0		%		70-130	22-NOV-19
Molybdenum (Mo)-[98.1		%		70-130	22-NOV-19
Nickel (Ni)-Dissolve			94.6		%		70-130	22-NOV-19
Phosphorus (P)-Dis			104.0		%		70-130	22-NOV-19
Potassium (K)-Diss			102.9		%		70-130	22-NOV-19
Rubidium (Rb)-Diss			101.6		%		70-130	22-NOV-19
Selenium (Se)-Diss			103.0		%		70-130	22-NOV-19
Silicon (Si)-Dissolve	ed		87.1		%		70-130	22-NOV-19
Silver (Ag)-Dissolve			99.0		%		70-130	22-NOV-19
Sodium (Na)-Dissol	ved		N/A	MS-B	%		-	22-NOV-19
Strontium (Sr)-Disse	olved		N/A	MS-B	%		-	22-NOV-19
Sulfur (S)-Dissolved	I		98.9		%		70-130	22-NOV-19
Tellurium (Te)-Disse	olved		94.2		%		70-130	22-NOV-19
Thallium (TI)-Dissol	ved		91.3		%		70-130	22-NOV-19
Thorium (Th)-Disso	lved		104.7		%		70-130	22-NOV-19
Tin (Sn)-Dissolved			96.0		%		70-130	22-NOV-19
Titanium (Ti)-Dissol	ved		97.4		%		70-130	22-NOV-19
Tungsten (W)-Disso	olved		97.6		%		70-130	22-NOV-19
Uranium (U)-Dissol	ved		101.5		%		70-130	22-NOV-19
Vanadium (V)-Disso	olved		101.5		%		70-130	22-NOV-19
Zinc (Zn)-Dissolved			99.2		%		70-130	22-NOV-19
Zirconium (Zr)-Diss	olved		102.3		%		70-130	22-NOV-19
Batch R4922 WG3226445-3 DI		L2380793-3						
Aluminum (Al)-Diss		0.531	0.504		mg/L	5.2	20	24-NOV-19
Antimony (Sb)-Diss	olved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-NOV-19
Arsenic (As)-Dissol	ved	0.00067	0.00072		mg/L			24-NOV-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4922879)							
WG3226445-3 DUP Arsenic (As)-Dissolved		L2380793-3 0.00067	0.00072		mg/L	6.5	20	24-NOV-19
Barium (Ba)-Dissolved		0.0154	0.0155		mg/L	0.8	20	24-NOV-19
Beryllium (Be)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-NOV-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-NOV-19
Cadmium (Cd)-Dissolve	ed	<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-NOV-19
Calcium (Ca)-Dissolved	d	9.01	8.86		mg/L	1.7	20	24-NOV-19
Cesium (Cs)-Dissolved	I	0.000011	0.000010		mg/L	11	20	24-NOV-19
Chromium (Cr)-Dissolv	red	0.00104	0.00094		mg/L	10	20	24-NOV-19
Cobalt (Co)-Dissolved		0.00013	0.00013		mg/L	0.1	20	24-NOV-19
Copper (Cu)-Dissolved		0.00245	0.00254		mg/L	3.3	20	24-NOV-19
Iron (Fe)-Dissolved		0.342	0.325		mg/L	5.2	20	24-NOV-19
Lead (Pb)-Dissolved		0.000065	0.000065		mg/L	0.2	20	24-NOV-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-NOV-19
Magnesium (Mg)-Disso	olved	4.15	4.38		mg/L	5.5	20	24-NOV-19
Manganese (Mn)-Disso	olved	0.00370	0.00413		mg/L	11	20	24-NOV-19
Molybdenum (Mo)-Diss	solved	0.00101	0.00102		mg/L	1.1	20	24-NOV-19
Nickel (Ni)-Dissolved		0.00127	0.00122		mg/L	3.6	20	24-NOV-19
Phosphorus (P)-Dissolv	ved	<0.30	< 0.30	RPD-NA	mg/L	N/A	20	24-NOV-19
Potassium (K)-Dissolve	ed	1.08	1.10		mg/L	2.7	20	24-NOV-19
Rubidium (Rb)-Dissolve	ed	0.00081	0.00079		mg/L	2.1	20	24-NOV-19
Selenium (Se)-Dissolve	ed	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-NOV-19
Silicon (Si)-Dissolved		14.5	14.5		mg/L	0.0	20	24-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-NOV-19
Sodium (Na)-Dissolved	İ	3.02	3.29		mg/L	8.6	20	24-NOV-19
Strontium (Sr)-Dissolve	ed	0.0669	0.0695		mg/L	3.8	20	24-NOV-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	24-NOV-19
Tellurium (Te)-Dissolve	ed	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	24-NOV-19
Thallium (TI)-Dissolved	I	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-NOV-19
Thorium (Th)-Dissolved	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-NOV-19
Titanium (Ti)-Dissolved	d	0.023	0.021		mg/L	7.5	20	24-NOV-19
Tungsten (W)-Dissolve	ed	<0.00010	<0.00010		mg/L			24-NOV-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4922879								
WG3226445-3 DUP		L2380793-3						
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-NOV-19
Uranium (U)-Dissolved		0.000057	0.000057		mg/L	1.1	20	24-NOV-19
Vanadium (V)-Dissolved		0.00264	0.00270		mg/L	2.2	20	24-NOV-19
Zinc (Zn)-Dissolved		0.0015	0.0013		mg/L	14	20	24-NOV-19
Zirconium (Zr)-Dissolved		0.00111	0.00105		mg/L	5.3	20	24-NOV-19
WG3226445-2 LCS Aluminum (Al)-Dissolved			94.8		%		80-120	24-NOV-19
Antimony (Sb)-Dissolved			104.5		%		80-120	24-NOV-19
Arsenic (As)-Dissolved			94.9		%		80-120	24-NOV-19
Barium (Ba)-Dissolved			103.8		%		80-120	24-NOV-19
Beryllium (Be)-Dissolved			103.9		%		80-120	24-NOV-19
Bismuth (Bi)-Dissolved			101.1		%		80-120	24-NOV-19
Boron (B)-Dissolved			104.4		%		80-120	24-NOV-19
Cadmium (Cd)-Dissolved	d		98.2		%		80-120	24-NOV-19
Calcium (Ca)-Dissolved			105.3		%		80-120	24-NOV-19
Cesium (Cs)-Dissolved			101.1		%		80-120	24-NOV-19
Chromium (Cr)-Dissolved	d		95.8		%		80-120	24-NOV-19
Cobalt (Co)-Dissolved			95.5		%		80-120	24-NOV-19
Copper (Cu)-Dissolved			96.8		%		80-120	24-NOV-19
Iron (Fe)-Dissolved			92.5		%		80-120	24-NOV-19
Lead (Pb)-Dissolved			104.7		%		80-120	24-NOV-19
Lithium (Li)-Dissolved			99.4		%		80-120	24-NOV-19
Magnesium (Mg)-Dissolv	red		97.4		%		80-120	24-NOV-19
Manganese (Mn)-Dissolv	red		96.7		%		80-120	24-NOV-19
Molybdenum (Mo)-Dissol	lved		105.0		%		80-120	24-NOV-19
Nickel (Ni)-Dissolved			96.2		%		80-120	24-NOV-19
Phosphorus (P)-Dissolve	d		84.5		%		70-130	24-NOV-19
Potassium (K)-Dissolved			100.8		%		80-120	24-NOV-19
Rubidium (Rb)-Dissolved	I		99.6		%		80-120	24-NOV-19
Selenium (Se)-Dissolved			97.7		%		80-120	24-NOV-19
Silicon (Si)-Dissolved			107.5		%		60-140	24-NOV-19
Silver (Ag)-Dissolved			101.8		%		80-120	24-NOV-19
Sodium (Na)-Dissolved			101.4		%		80-120	24-NOV-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4922879)							
WG3226445-2 LCS Strontium (Sr)-Dissolve	-d		106.7		%		80-120	24-NOV-19
Sulfur (S)-Dissolved	,u		97.3		%		80-120	24-NOV-19 24-NOV-19
Tellurium (Te)-Dissolve	ed.		102.9		%		80-120	24-NOV-19 24-NOV-19
Thallium (TI)-Dissolved			102.2		%		80-120	24-NOV-19
Thorium (Th)-Dissolved			102.8		%		80-120	24-NOV-19
Tin (Sn)-Dissolved	-		97.3		%		80-120	24-NOV-19 24-NOV-19
Titanium (Ti)-Dissolved	i		89.0		%		80-120	24-NOV-19
Tungsten (W)-Dissolve			105.6		%		80-120	24-NOV-19
Uranium (U)-Dissolved			103.8		%		80-120	24-NOV-19
Vanadium (V)-Dissolve			101.1		%		80-120	24-NOV-19
Zinc (Zn)-Dissolved			97.1		%		80-120	24-NOV-19
Zirconium (Zr)-Dissolve	ed		103.0		%		80-120	24-NOV-19
WG3226445-1 MB							-	-
Aluminum (Al)-Dissolve	ed		<0.0010		mg/L		0.001	24-NOV-19
Antimony (Sb)-Dissolve	ed		<0.00010)	mg/L		0.0001	24-NOV-19
Arsenic (As)-Dissolved			<0.00010	1	mg/L		0.0001	24-NOV-19
Barium (Ba)-Dissolved			<0.00010	1	mg/L		0.0001	24-NOV-19
Beryllium (Be)-Dissolve	ed		<0.00010	1	mg/L		0.0001	24-NOV-19
Bismuth (Bi)-Dissolved			<0.00005	0	mg/L		0.00005	24-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-NOV-19
Cadmium (Cd)-Dissolv	ed		<0.00000	50	mg/L		0.000005	24-NOV-19
Calcium (Ca)-Dissolved	d		<0.050		mg/L		0.05	24-NOV-19
Cesium (Cs)-Dissolved	I		<0.00001	0	mg/L		0.00001	24-NOV-19
Chromium (Cr)-Dissolv	red		<0.00010	1	mg/L		0.0001	24-NOV-19
Cobalt (Co)-Dissolved			<0.00010	1	mg/L		0.0001	24-NOV-19
Copper (Cu)-Dissolved			<0.00020)	mg/L		0.0002	24-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-NOV-19
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	24-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Magnesium (Mg)-Disso	olved		<0.0050		mg/L		0.005	24-NOV-19
Manganese (Mn)-Disso	olved		<0.00010)	mg/L		0.0001	24-NOV-19
Molybdenum (Mo)-Diss	solved		<0.00005	0	mg/L		0.00005	24-NOV-19
Nickel (Ni)-Dissolved			<0.00050	1	mg/L		0.0005	24-NOV-19
Phosphorus (P)-Dissol	ved		< 0.050		mg/L		0.05	24-NOV-19



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Test	Matrix R	eference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4922879								
WG3226445-1 MB			.0.050				0.05	
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
Selenium (Se)-Dissolved	1		<0.000050		mg/L		0.00005	24-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Sodium (Na)-Dissolved	1		<0.050		mg/L		0.05	24-NOV-19
Strontium (Sr)-Dissolved	l		<0.00020		mg/L		0.0002	24-NOV-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	24-NOV-19
Tellurium (Te)-Dissolved	1		<0.00020		mg/L		0.0002	24-NOV-19
Thallium (TI)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-NOV-19
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
WG3226445-4 MS Aluminum (Al)-Dissolved		2385050-22	93.2		%		70-130	24-NOV-19
Antimony (Sb)-Dissolved			94.3		%		70-130 70-130	24-NOV-19 24-NOV-19
Arsenic (As)-Dissolved	•		94.6		%		70-130	24-NOV-19 24-NOV-19
Barium (Ba)-Dissolved			100.4		%		70-130	24-NOV-19 24-NOV-19
Beryllium (Be)-Dissolved	I		98.5		%		70-130	24-NOV-19 24-NOV-19
Bismuth (Bi)-Dissolved	•		93.5		%		70-130	24-NOV-19 24-NOV-19
Boron (B)-Dissolved			96.0		%		70-130	24-NOV-19 24-NOV-19
Cadmium (Cd)-Dissolved	d		97.5		%		70-130	24-NOV-19 24-NOV-19
Calcium (Ca)-Dissolved	u		95.5		%		70-130	24-NOV-19 24-NOV-19
Cesium (Cs)-Dissolved			92.3		%		70-130	
Chromium (Cr)-Dissolve	d		94.7		%		70-130 70-130	24-NOV-19
Cobalt (Co)-Dissolved	~		93.9		%			24-NOV-19
Copper (Cu)-Dissolved			96.4		%		70-130	24-NOV-19
Iron (Fe)-Dissolved			93.4		%		70-130	24-NOV-19
Lead (Pb)-Dissolved			95.4 95.4		% %		70-130	24-NOV-19
Leau (FD)-DISSUIVEU			30.4		/0		70-130	24-NOV-19



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Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4922879							
WG3226445-4 MS	L2385050-22	01.1		0/		70.400	04.1101/ :5
Lithium (Li)-Dissolved		91.1		%		70-130	24-NOV-19
Magnesium (Mg)-Dissolved Manganese (Mn)-Dissolved		89.2				70-130	24-NOV-19
		92.3		%		70-130	24-NOV-19
Molybdenum (Mo)-Dissolved Nickel (Ni)-Dissolved		92.3		%		70-130	24-NOV-19
Phosphorus (P)-Dissolved		94.2		%		70-130	24-NOV-19
		90.1		%		70-130	24-NOV-19
Potassium (K)-Dissolved Rubidium (Rb)-Dissolved		96.5 96.6		%		70-130	24-NOV-19
` ,		101.3		%		70-130	24-NOV-19
Selenium (Se)-Dissolved Silicon (Si)-Dissolved		99.0		%		70-130	24-NOV-19
Silver (Ag)-Dissolved		93.1		%		70-130 70-130	24-NOV-19
Sodium (Na)-Dissolved		99.7		%		70-130 70-130	24-NOV-19 24-NOV-19
Strontium (Sr)-Dissolved		94.1		%		70-130 70-130	24-NOV-19 24-NOV-19
Sulfur (S)-Dissolved		97.7		%		70-130	24-NOV-19 24-NOV-19
Tellurium (Te)-Dissolved		100.1		%		70-130	24-NOV-19 24-NOV-19
Thallium (TI)-Dissolved		93.4		%		70-130	24-NOV-19
Thorium (Th)-Dissolved		102.2		%		70-130	24-NOV-19
Tin (Sn)-Dissolved		92.5		%		70-130	24-NOV-19
Titanium (Ti)-Dissolved		89.7		%		70-130	24-NOV-19
Tungsten (W)-Dissolved		96.4		%		70-130	24-NOV-19
Uranium (U)-Dissolved		96.5		%		70-130	24-NOV-19
Vanadium (V)-Dissolved		96.5		%		70-130	24-NOV-19
Zinc (Zn)-Dissolved		103.4		%		70-130	24-NOV-19
Zirconium (Zr)-Dissolved		96.7		%		70-130	24-NOV-19
NH3-F-VA Water							-
Batch R4921471							
WG3225050-3 DUP	L2385413-1						
Ammonia, Total (as N)	0.0051	<0.0050	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3225066-3 DUP Ammonia, Total (as N)	L2385415-19 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3225050-2 LCS Ammonia, Total (as N)		100.0		%		85-115	21-NOV-19
WG3225066-2 LCS Ammonia, Total (as N)		99.8		%		85-115	21-NOV-19



Workorder: L2385415 Report Date: 27-NOV-19 Page 18 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA	Water							
Batch R492147								
WG3225050-1 MB Ammonia, Total (as N			<0.0050		mg/L		0.005	21-NOV-19
WG3225066-1 MB Ammonia, Total (as N			<0.0050		mg/L		0.005	21-NOV-19
WG3225050-4 MS Ammonia, Total (as N	۷)	L2385413-2	100.1		%		75-125	21-NOV-19
NO2-L-IC-N-VA	Water							
Batch R49202	86							
WG3224176-3 DUI Nitrite (as N)	•	L2385415-1 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224176-2 LCS Nitrite (as N)	6		99.5		%		90-110	21-NOV-19
WG3224176-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-19
WG3224176-4 MS Nitrite (as N)		L2385415-2	94.3		%		75-125	21-NOV-19
Batch R492042	26							
WG3224204-3 DUI Nitrite (as N)		L2385415-16 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224204-2 LCS Nitrite (as N)	6		100.1		%		90-110	21-NOV-19
WG3224204-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-19
WG3224204-4 MS Nitrite (as N)		L2385488-1	100.7		%		75-125	21-NOV-19
NO3-L-IC-N-VA	Water							
Batch R492028	86							
WG3224176-3 DUI Nitrate (as N)	P	L2385415-1 0.415	0.413		mg/L	0.4	20	21-NOV-19
WG3224176-2 LCS Nitrate (as N)	5		102.8		%		90-110	21-NOV-19
WG3224176-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	21-NOV-19
WG3224176-4 MS Nitrate (as N)		L2385415-2	101.4		%		75-125	21-NOV-19



Workorder: L2385415 Report Date: 27-NOV-19 Page 19 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA		Water							
Batch R4	920426								
WG3224204-3 Nitrate (as N)	DUP		L2385415-16 0.0674	0.0673		mg/L	0.2	20	21-NOV-19
WG3224204-2 Nitrate (as N)	LCS			101.7		%		90-110	21-NOV-19
WG3224204-1 Nitrate (as N)	MB			<0.0050		mg/L		0.005	21-NOV-19
PH-PCT-VA		Water							
Batch R4	920107								
WG3224172-2 pH	CRM		VA-PH7-BUF	7.02		рН		6.9-7.1	21-NOV-19
WG3224185-2 pH	CRM		VA-PH7-BUF	7.01		рН		6.9-7.1	21-NOV-19
WG3224172-4 pH	DUP		L2383859-1 6.91	6.91	J	рН	0.00	0.3	21-NOV-19
WG3224185-4 pH	DUP		L2385166-2 7.59	7.59	J	рН	0.00	0.3	21-NOV-19
SO4-IC-N-VA		Water							
Batch R4	920286								
WG3224176-3 Sulfate (SO4)	DUP		L2385415-1 2.46	2.44		mg/L	0.7	20	21-NOV-19
WG3224176-2 Sulfate (SO4)	LCS			102.4		%		90-110	21-NOV-19
WG3224176-1 Sulfate (SO4)	MB			<0.30		mg/L		0.3	21-NOV-19
WG3224176-4 Sulfate (SO4)	MS		L2385415-2	99.3		%		75-125	21-NOV-19
Batch R4	920426								
WG3224204-3	920426 DUP		L2385415-16						
Sulfate (SO4)			2.54	2.53		mg/L	0.5	20	21-NOV-19
WG3224204-2 Sulfate (SO4)	LCS			101.6		%		90-110	21-NOV-19
WG3224204-1 Sulfate (SO4)	MB			<0.30		mg/L		0.3	21-NOV-19
WG3224204-4 Sulfate (SO4)	MS		L2385488-1	98.9		%		75-125	21-NOV-19
TDS-VA		Water							



Workorder: L2385415 Report Date: 27-NOV-19 Page 20 of 22

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
TDS-VA	Water								
Batch R492131									
WG3224137-3 DUP Total Dissolved Solids		L2383842-1 2620	2600		mg/L	0.5	20	21-NOV-19	
WG3224137-6 DUP Total Dissolved Solids		L2385415-2 232	241		mg/L	3.8	20	21-NOV-19	
WG3224137-2 LCS Total Dissolved Solids			101.8		%		85-115	21-NOV-19	
WG3224137-5 LCS Total Dissolved Solids			99.8		%		85-115	21-NOV-19	
WG3224137-1 MB Total Dissolved Solids	3		<10		mg/L		10	21-NOV-19	
WG3224137-4 MB Total Dissolved Solids	3		<10		mg/L		10	21-NOV-19	

Workorder: L2385415 Report Date: 27-NOV-19

GHD Limited Client: Page 21 of 22

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Airesse MacPhee

Legend:

Contact:

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.

Workorder: L2385415 Report Date: 27-NOV-19

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Page 22 of 22

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	18-NOV-19 11:15	21-NOV-19 22:22	0.25	83	hours	EHTR-FM
	2	18-NOV-19 11:45	21-NOV-19 22:22	0.25	83	hours	EHTR-FM
	3	18-NOV-19 12:30	21-NOV-19 22:22	0.25	82	hours	EHTR-FM
	4	18-NOV-19 13:00	21-NOV-19 22:22	0.25	81	hours	EHTR-FM
	5	19-NOV-19 14:00	21-NOV-19 22:22	0.25	56	hours	EHTR-FM
	6	18-NOV-19 14:05	21-NOV-19 22:22	0.25	80	hours	EHTR-FM
	7	18-NOV-19 14:30	21-NOV-19 22:22	0.25	80	hours	EHTR-FM
	8	18-NOV-19 16:00	21-NOV-19 22:22	0.25	78	hours	EHTR-FM
	9	18-NOV-19 16:45	21-NOV-19 22:22	0.25	78	hours	EHTR-FM
	10	19-NOV-19 08:20	21-NOV-19 22:22	0.25	62	hours	EHTR-FM
	11	19-NOV-19 08:30	21-NOV-19 22:22	0.25	62	hours	EHTR-FM
	12	19-NOV-19 11:30	21-NOV-19 22:22	0.25	59	hours	EHTR-FM
	13	19-NOV-19 12:15	21-NOV-19 22:22	0.25	58	hours	EHTR-FM
	14	19-NOV-19 12:20	21-NOV-19 22:22	0.25	58	hours	EHTR-FM
	15	19-NOV-19 12:30	21-NOV-19 22:22	0.25	58	hours	EHTR-FM
	16	19-NOV-19 13:40	21-NOV-19 22:22	0.25	57	hours	EHTR-FM
	17	19-NOV-19 14:15	21-NOV-19 22:22	0.25	56	hours	EHTR-FM
	18	19-NOV-19 14:35	21-NOV-19 22:22	0.25	56	hours	EHTR-FM
	19	19-NOV-19 14:30	21-NOV-19 22:22	0.25	56	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2385415 were received on 20-NOV-19 09:15.

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 predetermined 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.

Environmental

Chain of Custody (COC) / Analytical Request Form

L2385415-COFC

COC Number: 17 -

Canada Toll Free: 1 800 668 9878

	www.alsglobat.com				<u>\</u>							1	ļ								·
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City/Province:	Waterloo, ON		Email 2	Laurie.Clark@gh	d.com, Natasha.	Turi@ghd	l.com	For tests	that can	not be pe	rformed :	ccordir	g to the	ervice level	selected,	you will b	e contacte	d.			
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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 filling 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.

Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2385415-COFC

COC Number: 17

www.alsglobal.com Contact and company name below will appear on the final report Report Format / Distribution ----Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To Company GHD Limited Select Report Format: 🗹 PDF 🔯 EXCEL 🗹 EDD (DIGITAL) Contact: Airesse MacPhee П 4 day [P4-20%] 1 Business day [E1 - 100%] 604 248 3661 Phone: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3-25%] Same Day, Weekend or Statutory holiday [E2 -200% ■ MAIL Company address below will appear on the final report 2 day [P2-50%] (Laboratory opening fees may apply)] Email 1 or Fax airesse.macphee@ghd.com 455 Phillip Street Street: Date and Time Required for all E&P TATs: dd-mmm-yy hn;mm City/Province: Waterloo, ON Laurie.Clark@ghd.com, Natasha.Turl@ghd.com Email 2 or tests that can not be performed according to the service level selected, you will be contacted N2L 3X2 Postal Code: Email 3 Michaela.Dyck@ghd.com,Lainey.Kong@ghd.com Analysis Request Invoice To 问 YES 门 NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Same as Report To-Copy of Invoice with Report ☑ YES ☐ NO Select Invoice Distribution:

EMAIL

MAIL

FAX Email 1 or Fax APinvoices-735@ghd.com Company: Contact: Email 2 Ŷ Ż Project Information Oil and Gas Required Fields (client use) <u>۾</u>. ALS Account # / Quote # Q72562 PO# AFE/Cost Center: 803 CONTAINERS Job#: 056484-52 Major/Minor Code: Routing Code: 73515713-2 PO / AFF: Requisitioner: SAMPLES ON HOL LSD: Phase 52 - Campbell River GW _ocation: ALS Lab Work Order # (lab use only): ALS Contact: Selam W. Sampler: ਹੁ kalinity (ALS Sample # Sample Identification and/or Coordinates Date Time Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) いみてモバ SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down fist below Drinking Water (DW) Samples¹ (client use) (electronic COC only) Frozen SIF Observations No Are samples taken from a Regulated DW System? Ice Packs | Ice Cubes | Custody seal intact П No ☐ YES ☐ NO3 Cooling Initiated 🔲 FINAL COOKER TEMPERATURES °C Are samples for human consumption/ use? INITIAL COOLER TEMPERATURES °C ☐ YES ☐ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) 器ONOV Released by: Received by: Time: Received by:

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

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 26-NOV-19

Report Date: 05-DEC-19 19:13 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2387633Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers:

Legal Site Desc: Phase 52 - Campbell River GW

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2387633 CONTD....

PAGE 2 of 6 Version: FINAL

432 182 3.16 232 239 <1.0 <1.0	2.0 0.50 0.10 20 1.0	uS/cm mg/L pH mg/L		27-NOV-19 26-NOV-19	R4927267
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15.9	0.50	mg/L		26-NOV-19	R4927030
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.0051	0.0051	mg/L		27-NOV-19	
.0050	0.0050	mg/L		26-NOV-19	R4927030
.0010	0.0010	mg/L		26-NOV-19	R4927030
2.77	0.30	mg/L		26-NOV-19	R4927030
		3			
IELD				27-NOV-19	R4927085
IELD				27-NOV-19	R4925852
0226	0.0010	mg/L	27-NOV-19	27-NOV-19	R4926426
.00010	0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
00156	0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
00952	0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
.00010	0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
000050	0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
.131	0.010	mg/L	27-NOV-19	27-NOV-19	R4926426
000576	0.0000050	mg/L	27-NOV-19	27-NOV-19	R4926426
32.8	0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
000010	0.000010		27-NOV-19	27-NOV-19	R4926426
.00010	0.00010		27-NOV-19	27-NOV-19	R4926426
	0.00010	•	27-NOV-19	27-NOV-19	R4926426
		•	27-NOV-19		R4926426
			27-NOV-19		R4926426
		•	27-NOV-19		
		•			R4926426
			27-NOV-19	27-NOV-19	R4926426
		•			R4926426
		•			R4926450
00222		······································		1	
	0.000050	ma/l	27-NOV-19	27-NOV-19	R4926426
00106	0.000050 0.00050	mg/L mg/L	27-NOV-19 27-NOV-19	27-NOV-19 27-NOV-19	R4926426 R4926426
	00156 00952 000010 000050 0.131 000576 62.8 000010 00015 00142 0.231 000050 0.0010 6.17	00156 0.00010 00952 0.00010 000010 0.00010 000050 0.000050 0.131 0.010 000576 0.0000050 62.8 0.050 000010 0.00010 00015 0.00010 00142 0.00020 0.231 0.010 0.00050 0.00050 0.0010 0.0010 0.0010 0.0010 0.010 0.0050 0.822 0.00010	00156 0.00010 mg/L 00952 0.00010 mg/L 000010 0.00010 mg/L 000050 0.000050 mg/L 0.131 0.010 mg/L 000576 0.0000050 mg/L 000010 0.00001 mg/L 000010 0.00010 mg/L 00015 0.00010 mg/L 0.0142 0.00020 mg/L 0.00050 0.00050 mg/L 0.0010 0.00050 mg/L 0.0010 0.0010 mg/L 0.822 0.00010 mg/L	00156 0.00010 mg/L 27-NOV-19 00952 0.00010 mg/L 27-NOV-19 00010 0.00010 mg/L 27-NOV-19 000050 0.000050 mg/L 27-NOV-19 0.131 0.010 mg/L 27-NOV-19 000576 0.000050 mg/L 27-NOV-19 000010 0.050 mg/L 27-NOV-19 000010 0.00010 mg/L 27-NOV-19 00015 0.00010 mg/L 27-NOV-19 0.231 0.010 mg/L 27-NOV-19 0.00050 0.00050 mg/L 27-NOV-19 0.0010 0.0010 mg/L 27-NOV-19 0.0010 0.00050 mg/L 27-NOV-19 0.010 mg/L 27-NOV-19 27-NOV-19 0.0010 0.0010 mg/L 27-NOV-19 0.0010 mg/L 27-NOV-19 27-NOV-19	00156 0.00010 mg/L 27-NOV-19 27-NOV-19 27-NOV-19 00952 0.00010 mg/L 27-NOV-19 27-NOV-19 27-NOV-19 0.00010 0.00010 mg/L 27-NOV-19 27-NOV-19 27-NOV-19 0.000050 0.000050 mg/L 27-NOV-19 27-NOV-19 27-NOV-19 0.00576 0.0000050 mg/L 27-NOV-19 27-NOV-19 27-NOV-19 62.8 0.050 mg/L 27-NOV-19 27-NOV-19 0.00010 0.000010 mg/L 27-NOV-19 27-NOV-19 0.00015 0.00010 mg/L 27-NOV-19 27-NOV-19 0.0142 0.00020 mg/L 27-NOV-19 27-NOV-19 0.0231 0.010 mg/L 27-NOV-19 27-NOV-19 0.00050 0.00050 mg/L 27-NOV-19 27-NOV-19 0.0010 0.0010 mg/L 27-NOV-19 27-NOV-19 0.0010 0.0010 mg/L 27-NOV-19 27-NOV-19 0.0010

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

L2387633 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387633-1 WG-056484-251119-CT-01 Sampled By: C. Thorne on 25-NOV-19 @ 12:35 Matrix: GW							
Dissolved Metals							
Potassium (K)-Dissolved	2.59		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Rubidium (Rb)-Dissolved	0.00059		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Silicon (Si)-Dissolved	7.11		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Sodium (Na)-Dissolved	11.4		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Strontium (Sr)-Dissolved	0.135		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Sulfur (S)-Dissolved	1.19		0.50	mg/L	27-NOV-19	27-NOV-19	R4926426
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Tin (Sn)-Dissolved	0.00036		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Titanium (Ti)-Dissolved	0.00114		0.00030	mg/L	27-NOV-19	27-NOV-19	R4926426
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Uranium (U)-Dissolved	0.000131		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-19	27-NOV-19	R4926426
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-19	27-NOV-19	R4926426
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
L2387633-2 WG-056484-251119-CT-02 Sampled By: C. Thorne on 25-NOV-19 @ 13:00 Matrix: GW							
Physical Tests							
Conductivity	440		2.0	uS/cm		26-NOV-19	R4927267
Hardness (as CaCO3), dissolved	138		0.50	mg/L		27-NOV-19	
рН	7.97		0.10	рН		26-NOV-19	R4927267
Total Dissolved Solids	228		20	mg/L		28-NOV-19	R4929219
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	217		1.0	mg/L		26-NOV-19	R4927267
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-19	R4927267
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-19	R4927267
Alkalinity, Total (as CaCO3)	217		1.0	mg/L		26-NOV-19	R4927267
Ammonia, Total (as N)	9.24		0.13	mg/L		02-DEC-19	R4930052
Chloride (CI)	21.1		0.50	mg/L		26-NOV-19	R4927030
Fluoride (F)	<0.080	DLCI	0.080	mg/L		26-NOV-19	R4927030
Nitrate and Nitrite (as N)	<0.0051		0.0051	mg/L		27-NOV-19	
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-19	
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-19	R4927030
Sulfate (SO4)	3.35		0.30	mg/L		26-NOV-19	R4927030
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					27-NOV-19	
Dissolved Metals Filtration Location	FIELD			_		27-NOV-19	R4925852
Aluminum (AI)-Dissolved	0.0065		0.0010	mg/L	27-NOV-19	27-NOV-19	R4926426

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387633-2 WG-056484-251119-CT-02							
Sampled By: C. Thorne on 25-NOV-19 @ 13:00 Matrix: GW							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Arsenic (As)-Dissolved	0.00078		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Barium (Ba)-Dissolved	0.00959		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Boron (B)-Dissolved	0.216		0.010	mg/L	27-NOV-19	27-NOV-19	R4926426
Cadmium (Cd)-Dissolved	0.000265		0.0000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Calcium (Ca)-Dissolved	47.2		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Cesium (Cs)-Dissolved	0.000050		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Cobalt (Co)-Dissolved	0.00027		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Copper (Cu)-Dissolved	0.00314		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Iron (Fe)-Dissolved	0.329		0.010	mg/L	27-NOV-19	27-NOV-19	R4926426
Lead (Pb)-Dissolved	0.000082		0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-19	27-NOV-19	R4926426
Magnesium (Mg)-Dissolved	4.82		0.0050	mg/L	27-NOV-19	27-NOV-19	R4926426
Manganese (Mn)-Dissolved	1.31		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	27-NOV-19	27-NOV-19	R4926450
Molybdenum (Mo)-Dissolved	0.000396		0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Nickel (Ni)-Dissolved	0.00096		0.00050	mg/L	27-NOV-19	27-NOV-19	R4926426
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Potassium (K)-Dissolved	4.47		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Rubidium (Rb)-Dissolved	0.00100		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-19	27-NOV-19	R4926426
Silicon (Si)-Dissolved	6.94		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Sodium (Na)-Dissolved	16.2		0.050	mg/L	27-NOV-19	27-NOV-19	R4926426
Strontium (Sr)-Dissolved	0.160		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Sulfur (S)-Dissolved	1.26		0.50	mg/L	27-NOV-19	27-NOV-19	R4926426
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Tin (Sn)-Dissolved	0.00083		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	27-NOV-19	27-NOV-19	R4926426
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-19	27-NOV-19	R4926426
Uranium (U)-Dissolved	0.000080		0.000010	mg/L	27-NOV-19	27-NOV-19	R4926426
Vanadium (V)-Dissolved	0.00067		0.00050	mg/L	27-NOV-19	27-NOV-19	R4926426
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	27-NOV-19	27-NOV-19	R4926426
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-19	27-NOV-19	R4926426
							L

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2387633-1, -2	
Matrix Spike	Nitrate (as N)	MS-B	L2387633-1, -2	
•	` '		•	

Sample Parameter Qualifier key listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code Matrix Tes		Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0 (Calculation)

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Only)

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-D-CALC-VA Water Hardness (as CaCO3), dissolved APHA 2340B

"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod) or CVAFS

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod) ICPMS

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

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Reference Information

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

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

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

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

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

Gravimetric

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.

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2387633 Report Date: 05-DEC-19 Page 1 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R4927267								
WG3228940-4 DUP Alkalinity, Total (as CaC	O3)	L2387632-3 400	398		mg/L	0.4	20	26-NOV-19
WG3228940-3 LCS Alkalinity, Total (as CaC	:O3)		103.2		%		85-115	26-NOV-19
WG3228940-1 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	26-NOV-19
CL-IC-N-VA	Water							
Batch R4927030								
WG3228936-2 LCS Chloride (Cl)			99.9		%		90-110	26-NOV-19
WG3228936-1 MB Chloride (Cl)			<0.50		mg/L		0.5	26-NOV-19
EC-PCT-VA	Water							
Batch R4927267								
WG3228940-4 DUP Conductivity		L2387632-3 1970	1980		uS/cm	0.5	10	26-NOV-19
WG3228940-3 LCS Conductivity			103.5		%		90-110	26-NOV-19
WG3228940-1 MB Conductivity			<2.0		uS/cm		2	26-NOV-19
F-IC-N-VA	Water							
Batch R4927030								
WG3228936-2 LCS Fluoride (F)			99.7		%		90-110	26-NOV-19
WG3228936-1 MB Fluoride (F)			<0.020		mg/L		0.02	26-NOV-19
HG-D-CVAA-VA	Water							
Batch R4926450								
WG3229739-15 DUP Mercury (Hg)-Dissolved		L2387382-3 <0.000050	<0.000005	5C RPD-NA	mg/L	N/A	20	27-NOV-19
WG3229739-14 LCS Mercury (Hg)-Dissolved			96.6		%		80-120	27-NOV-19
WG3229739-13 MB Mercury (Hg)-Dissolved			<0.000005	5C	mg/L		0.000005	27-NOV-19
WG3229739-16 MS Mercury (Hg)-Dissolved		L2387382-4	103.6		%		70-130	27-NOV-19
MET-D-CCMS-VA	Water							



Workorder: L2387633 Report Date: 05-DEC-19 Page 2 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Metro-CCMS-VA Water Batch R426426 WG322916-03 DUP Aluminum (Al)-Dissolved 0.128 0.129 mg/L 0.1 20 27-NOV-19 Aluminum (Al)-Dissolved 0.00043 0.00043 mg/L 0.1 20 27-NOV-19 Aluminum (Al)-Dissolved 0.00043 0.00043 mg/L 0.1 20 27-NOV-19 Arsenic (As)-Dissolved 0.0034 0.00022 mg/L 4.9 20 27-NOV-19 Barlum (Ba)-Dissolved 0.0454 0.0440 mg/L 3.3 20 27-NOV-19 Barlum (Ba)-Dissolved 0.00500 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Bismuth (Bi)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Bismuth (Bi)-Dissolved 0.0021 0.021 mg/L 0.8 20 27-NOV-19 Cadmium (Cd)-Dissolved 0.000050 0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Cadmium (Cd)-Dissolved 0.000050 0.000050 RPD-NA mg/L 0.8 20 27-NOV-19 Casium (Ca)-Dissolved 0.00024 0.00024 mg/L 2.2 20 27-NOV-19 Casium (Ca)-Dissolved 0.00024 0.00025 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved 0.000044 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved 0.00045 0.000044 mg/L N/A 20 27-NOV-19 Cobalt (Co)-Dissolved 0.00045 0.00044 mg/L N/A 20 27-NOV-19 Labihum (Li)-Dissolved 0.00050 0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Labihum (Li)-Dissolved 0.00050 0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Labihum (Li)-Dissolved 0.00050 0.00050 RPD-NA mg/L N/A 20 27-NOV-19	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG3229160-3 DUP	MET-D-CCMS-VA	Water							
Aluminum (Al)-Dissolved 0.128 0.129 mg/L 1.2 20 27-NOV-19 Antsinic (As)-Dissolved 0.00043 0.00032 mg/L 0.1 20 27-NOV-19 Artsinic (As)-Dissolved 0.00044 0.00032 mg/L 4.9 20 27-NOV-19 Barium (Bi)-Dissolved 0.00010 <0.00010 RPD-NA mg/L N/A 20 27-NOV-19 Bismuth (Bi)-Dissolved <0.00010 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Borton (B)-Dissolved <0.021 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Cadrium (Cd)-Dissolved <0.001 <0.0000050 RPD-NA mg/L N/A 20 27-NOV-19 Cesium (Cs)-Dissolved <0.000268 <0.000027 mg/L 3.6 20 27-NOV-19 Cesium (Cs)-Dissolved <0.000264 <0.00020 mg/L 1.6 20 27-NOV-19 Cobalt (Co)-Dissolved <0.000010 <0.00010 RPD-NA mg/L	Batch R492	6426							
Antimory (Sb)-Dissolved 0.00043 0.00043 mg/L 0.1 20 27-NOV-19 Arsenic (As)-Dissolved 0.00034 0.00032 mg/L 4.9 20 27-NOV-19 Barium (Ba)-Dissolved 0.0454 0.0440 mg/L 3.3 20 27-NOV-19 Beryllium (Ba)-Dissolved 40.00010 <0.00010 mg/L N/A 20 27-NOV-19 Bismuth (Bi)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Bismuth (Bi)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Boron (B)-Dissolved 0.021 0.021 mg/L 0.8 20 27-NOV-19 Cadimium (Cd)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Cadimium (Cd)-Dissolved 23.9 24.7 mg/L 3.6 20 27-NOV-19 Cesium (Cs)-Dissolved 0.000268 0.000274 mg/L 3.6 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved 0.00045 0.00044 mg/L 3.1 20 27-NOV-19 Coper (Cu)-Dissolved 0.00045 0.00044 mg/L 3.1 20 27-NOV-19 Lead (Pb)-Dissolved 0.00050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Lead (Pb)-Dissolved 0.00050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Lithium (Li)-Dissolved 0.00065 0.00066 mg/L 0.8 20 27-NOV-19 Magnasium (Mg)-Dissolved 0.0065 0.00066 mg/L 0.4 20 27-NOV-19 Magnasium (Mg)-Dissolved 0.0066 0.00066 mg/L 0.3 20 27-NOV-19 Magnasium (Mg)-Dissolved 0.0050 0.0066 mg/L 0.3 20 27-NOV-19 Magnasium (Mg)-Dissolved 0.0050 0.0076 mg/L 0.3 20 27-NOV-19 Mickel (Ni)-Dissolved 0.00076 0.00776 mg/L 0.1 20 27-NOV-19 Phosphorus (P)-Dissolved 0.00076 0.00776 mg/L 0.1 20 27-NOV-19 Phosphorus (P)-Dissolved 0.00076 0.00070 RPD-NA mg/L N/A 20 27-NOV-19 Rubidium (Rb)-Dissolved 0.00016 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Selenium (Sa)-Dissolved 0.00010 0.000010 RPD-NA mg/L 0.1 20 27-NOV-19 Silicon (Si)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Silicon (Si)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Silicon (Si)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Thallium (Ti)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Thallium (Ti)-Dissolved 0.00010 0.000010 RPD-NA mg/L N/A 20 27-NOV-19		_		0.120		ma/l	4.0	20	07 NOV 40
Arsenic (As)-Dissolved 0.00034 0.00032 mg/L 4.9 20 27-NOV-19 Barium (Ba)-Dissolved 0.0454 0.0401 mg/L 3.3 20 27-NOV-19 Beryllium (Be)-Dissolved <0.00010						•			
Barium (Ba)-Dissolved 0.0454 0.0440 mg/L 3.3 20 27-NOV-19 Beryllium (Be)-Dissolved <0.00010						•			
Beryllium (Be)-Dissolved	` '					•			
Bismuth (Bi)-Dissolved	` '				DDD 114	•			
Boron (B)-Dissolved 0.021 0.021 mg/L 0.8 20 27-NOV-19 Cadmium (Cd)-Dissolved <0.0000050 <0.0000050 RPD-NA mg/L N/A 20 27-NOV-19 Calcium (Ca)-Dissolved 23.9 24.7 mg/L 3.6 20 27-NOV-19 Calcium (Ca)-Dissolved 0.000268 0.000274 mg/L 2.2 20 27-NOV-19 Cesium (Cs)-Dissolved 0.000268 0.000274 mg/L 2.2 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-NOV-19 Copper (Cu)-Dissolved 0.00045 0.00044 RPD-NA mg/L 3.1 20 27-NOV-19 Iron (Fe)-Dissolved 0.0099 0.098 mg/L 0.8 20 27-NOV-19 Iron (Fe)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Lead (Pb)-Dissolved 0.00050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Lithum (Li)-Dissolved 0.0085 0.0086 mg/L 0.4 20 27-NOV-19 Manganesum (Mg)-Dissolved 1.89 1.89 mg/L 0.3 20 27-NOV-19 Manganese (Mn)-Dissolved 0.054 0.0540 mg/L 0.8 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00776 0.00776 mg/L 0.8 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Nickel (Ni)-Dissolved 0.050 <0.050 RPD-NA mg/L N/A 20 27-NOV-19 Phosphorus (P)-Dissolved 4.0.7 41.9 mg/L 2.9 20 27-NOV-19 Silicon (Si)-Dissolved 0.00016 <0.00010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Silicon (Si)-Dissolved 0.00016 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Silicon (Si)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Silicon (Si)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Silicon (Ti)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Silicon (Ti)-Dissolved 0.00010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Tellurium (Te)-Dissolved 0.000010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Tellurium (Te)-Dissolved 0.000010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Tellur	. , ,					-			
Cadmium (Cd)-Dissolved <0.0000050 <0.000005C RPD-NA mg/L N/A 20 27-NOV-19 Calcium (Ca)-Dissolved 23.9 24.7 mg/L 3.6 20 27-NOV-19 Cesium (Cs)-Dissolved 0.000288 0.000274 mg/L 1.6 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 1.6 20 27-NOV-19 Cobalt (Co)-Dissolved 0.00010 <0.00010	` ,				RPD-NA	•			
Calcium (Ca)-Dissolved 23.9 24.7 mg/L 3.6 20 27-NOV-19 Cesium (Cs)-Dissolved 0.000268 0.000274 mg/L 2.2 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved -0.00010 <0.00010	, ,					•			
Cesium (Cs)-Dissolved 0.000268 0.000274 mg/L 2.2 20 27-NOV-19 Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved <0.00010	, ,				RPD-NA	•			
Chromium (Cr)-Dissolved 0.00024 0.00020 mg/L 16 20 27-NOV-19 Cobalt (Co)-Dissolved <0.00010	` ,					•			
Cobalt (Co)-Dissolved <.0.00010 <0.00010 RPD-NA mg/L N/A 20 27-NOV-19 Copper (Cu)-Dissolved 0.00045 0.00044 mg/L 3.1 20 27-NOV-19 Iron (Fe)-Dissolved 0.0099 0.098 mg/L 0.8 20 27-NOV-19 Lead (Pb)-Dissolved <0.000050						•			
Copper (Cu)-Dissolved 0.00045 0.00044 mg/L 3.1 20 27-NOV-19 Iron (Fe)-Dissolved 0.099 0.098 mg/L 0.8 20 27-NOV-19 Lead (Pb)-Dissolved <0.000050	` ,							20	27-NOV-19
Iron (Fe)-Dissolved 0.099 0.098 mg/L 0.8 20 27-NOV-19 Lead (Pb)-Dissolved <0.000050					RPD-NA	mg/L	N/A	20	27-NOV-19
Lead (Pb)-Dissolved <0.000050 <0.000050 RPD-NA mg/L N/A 20 27-NOV-19 Lithium (Li)-Dissolved 0.0085 0.0086 mg/L 0.4 20 27-NOV-19 Magnesium (Mg)-Dissolved 1.89 1.89 mg/L 0.3 20 27-NOV-19 Manganese (Mn)-Dissolved 0.0544 0.0540 mg/L 0.8 20 27-NOV-19 Molybdenum (Mo)-Dissolved 0.00776 0.00776 mg/L 0.1 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved <0.050						•	3.1	20	27-NOV-19
Lithium (Li)-Dissolved 0.085 0.086 mg/L 0.4 20 27-NOV-19 Magnesium (Mg)-Dissolved 1.89 1.89 mg/L 0.3 20 27-NOV-19 Manganese (Mn)-Dissolved 0.0544 0.0540 mg/L 0.8 20 27-NOV-19 Molybdenum (Mo)-Dissolved 0.00776 0.00776 mg/L 0.1 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved 0.0007 0.00075 mg/L N/A 20 27-NOV-19 Potassium (K)-Dissolved 40.7 41.9 mg/L N/A 20 27-NOV-19 Rubidium (Rb)-Dissolved 0.0167 0.0170 mg/L 1.8 20 27-NOV-19 Relenium (Se)-Dissolved 0.00315 0.000269 mg/L 1.6 20 27-NOV-19 Silicon (Si)-Dissolved 6.24 6.41 mg/L N/A 20 27-NOV-19 Siliver (Ag)-Dissolved 54.9 <td>,</td> <td></td> <td></td> <td></td> <td></td> <td>mg/L</td> <td>0.8</td> <td>20</td> <td>27-NOV-19</td>	,					mg/L	0.8	20	27-NOV-19
Magnesium (Mg)-Dissolved 1.89 1.89 mg/L 0.3 20 27-NOV-19 Manganese (Mn)-Dissolved 0.0544 0.0540 mg/L 0.8 20 27-NOV-19 Molybdenum (Mo)-Dissolved 0.00776 0.00776 mg/L 0.1 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved <0.050	` ,				RPD-NA	mg/L	N/A	20	27-NOV-19
Manganese (Mn)-Dissolved 0.0544 0.0540 mg/L 0.8 20 27-NOV-19 Molybdenum (Mo)-Dissolved 0.00776 0.00776 mg/L 0.1 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved <0.050	Lithium (Li)-Dissolv	/ed	0.0085	0.0086		mg/L	0.4	20	27-NOV-19
Molybdenum (Mo)-Dissolved 0.00776 0.00776 mg/L 0.1 20 27-NOV-19 Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved <0.050	Magnesium (Mg)-E	Dissolved	1.89	1.89		mg/L	0.3	20	27-NOV-19
Nickel (Ni)-Dissolved 0.00077 0.00075 mg/L 3.9 20 27-NOV-19 Phosphorus (P)-Dissolved <0.050	Manganese (Mn)-	Dissolved	0.0544	0.0540		mg/L	0.8	20	27-NOV-19
Phosphorus (P)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 27-NOV-19 Potassium (K)-Dissolved 40.7 41.9 mg/L 2.9 20 27-NOV-19 Rubidium (Rb)-Dissolved 0.0167 0.0170 mg/L 1.8 20 27-NOV-19 Selenium (Se)-Dissolved 0.000315 0.000269 mg/L 16 20 27-NOV-19 Silicon (Si)-Dissolved 6.24 6.41 mg/L 2.7 20 27-NOV-19 Silver (Ag)-Dissolved <0.000010	Molybdenum (Mo)-	Dissolved	0.00776	0.00776		mg/L	0.1	20	27-NOV-19
Potassium (K)-Dissolved 40.7 41.9 mg/L 2.9 20 27-NOV-19 Rubidium (Rb)-Dissolved 0.0167 0.0170 mg/L 1.8 20 27-NOV-19 Selenium (Se)-Dissolved 0.000315 0.000269 mg/L 16 20 27-NOV-19 Silicon (Si)-Dissolved 6.24 6.41 mg/L 2.7 20 27-NOV-19 Silver (Ag)-Dissolved <0.000010	Nickel (Ni)-Dissolv	ed	0.00077	0.00075		mg/L	3.9	20	27-NOV-19
Rubidium (Rb)-Dissolved 0.0167 0.0170 mg/L 1.8 20 27-NOV-19 Selenium (Se)-Dissolved 0.000315 0.000269 mg/L 16 20 27-NOV-19 Silicon (Si)-Dissolved 6.24 6.41 mg/L 2.7 20 27-NOV-19 Silver (Ag)-Dissolved <0.000010	Phosphorus (P)-Di	ssolved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-NOV-19
Selenium (Se)-Dissolved 0.000315 0.000269 mg/L 16 20 27-NOV-19 Silicon (Si)-Dissolved 6.24 6.41 mg/L 2.7 20 27-NOV-19 Silver (Ag)-Dissolved <0.000010	Potassium (K)-Diss	solved	40.7	41.9		mg/L	2.9	20	27-NOV-19
Silicon (Si)-Dissolved 6.24 6.41 mg/L 2.7 20 27-NOV-19 Silver (Ag)-Dissolved <0.000010	Rubidium (Rb)-Dis	solved	0.0167	0.0170		mg/L	1.8	20	27-NOV-19
Silver (Ag)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Sodium (Na)-Dissolved 54.9 54.9 mg/L 0.0 20 27-NOV-19 Strontium (Sr)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Sulfur (S)-Dissolved 8.19 8.52 mg/L 4.0 20 27-NOV-19 Tellurium (Te)-Dissolved <0.00020	Selenium (Se)-Disa	solved	0.000315	0.000269		mg/L	16	20	27-NOV-19
Sodium (Na)-Dissolved 54.9 54.9 mg/L 0.0 20 27-NOV-19 Strontium (Sr)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Sulfur (S)-Dissolved 8.19 8.52 mg/L 4.0 20 27-NOV-19 Tellurium (Te)-Dissolved <0.00020	Silicon (Si)-Dissolv	red	6.24	6.41		mg/L	2.7	20	27-NOV-19
Strontium (Sr)-Dissolved 0.281 0.282 mg/L 0.1 20 27-NOV-19 Sulfur (S)-Dissolved 8.19 8.52 mg/L 4.0 20 27-NOV-19 Tellurium (Te)-Dissolved <0.00020	Silver (Ag)-Dissolv	ed	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-19
Sulfur (S)-Dissolved 8.19 8.52 mg/L 4.0 20 27-NOV-19 Tellurium (Te)-Dissolved <0.00020	Sodium (Na)-Disso	olved	54.9	54.9		mg/L	0.0	20	27-NOV-19
Tellurium (Te)-Dissolved <0.00020	Strontium (Sr)-Diss	solved	0.281	0.282		mg/L	0.1	20	27-NOV-19
Thallium (TI)-Dissolved <0.000010 <0.000010 RPD-NA mg/L N/A 20 27-NOV-19 Thorium (Th)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-NOV-19	Sulfur (S)-Dissolve	d	8.19	8.52		mg/L	4.0	20	27-NOV-19
Thorium (Th)-Dissolved <0.00010 <0.00010 RPD-NA mg/L N/A 20 27-NOV-19	Tellurium (Te)-Diss	solved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-NOV-19
	Thallium (TI)-Disso	olved	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-19
	Thorium (Th)-Disse	olved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-19
	Tin (Sn)-Dissolved		<0.00010	<0.00010		mg/L			27-NOV-19



Workorder: L2387633 Report Date: 05-DEC-19 Page 3 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Metro-DCMS-VA Water Batch R4926426 WG3229160-3 DUP	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3229160-3 DUP L238807-1 N/O 20 27-NOV-19 Tiflanium (Ti)-Dissolved <0.00030 <0.00030 RPD-NA mg/L N/A 20 27-NOV-19 Tiflanium (Ti)-Dissolved <0.00034 <0.00038 RPD-NA mg/L 3.0 20 27-NOV-19 Uranium (U)-Dissolved <0.00034 <0.00038 mg/L 1.3 20 27-NOV-19 Vanadium (V)-Dissolved <0.00025 <0.0012 mg/L 6.7 20 27-NOV-19 Zinc (Zn)-Dissolved <0.00020 <0.00020 RPD-NA mg/L 1.5 20 27-NOV-19 Zirconlum (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-NOV-19 WG3229160-2 LCS N mg/L N/A 20 27-NOV-19 Artimony (Sb)-Dissolved 99.2 % 80-120 27-NOV-19 Artimony (Sb)-Dissolved 98.8 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8	MET-D-CCMS-VA	Water							
Tin (Sn)-Dissolved	Batch R4926426								
Titanium (Ti)-Dissolved				<0.00010	RPD-NA	ma/L	N/A	20	27-NOV-19
Tungsten (W)-Dissolved	, ,								
Uranium (U)-Dissolved 0.000342 0.000338 mg/L 1.3 20 27-NOV-19 Vanadium (V)-Dissolved 0.00095 0.00102 mg/L 6.7 20 27-NOV-19 Zinc (Zn)-Dissolved 0.0012 0.0011 mg/L 15 20 27-NOV-19 Wicozal (Achoe) 2.0002 v.00020 RPD-NA mg/L N/A 20 27-NOV-19 Wicozal (Achoe) 2.0002 RPD-NA mg/L N/A 20 27-NOV-19 Aluminum (Al)-Dissolved 90.2 % 80-120 27-NOV-19 Antimony (Sb)-Dissolved 91.8 % 80-120 27-NOV-19 Arsenic (As)-Dissolved 98.4 % 80-120 27-NOV-19 Arsenic (As)-Dissolved 96.8 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Cadimum (Ca)-Dissolved 96.0 % 80-120 27-NOV-19 </td <td></td> <td></td> <td></td> <td></td> <td>11. 2 11.</td> <td></td> <td></td> <td></td> <td></td>					11. 2 11.				
Vanadium (V)-Dissolved 0.00095 0.00102 mg/L 6.7 20 27-NOV-19 Zinc (Zn)-Dissolved 0.0012 0.0011 mg/L 15 20 27-NOV-19 Zinc (Zn)-Dissolved <0.00020	3		0.000342						
Zinc (Zn)-Dissolved 0.0012 0.0011 mg/L 15 20 27-NOV-19 Zirconium (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-NOV-19 WG3229160-2 LCS 80-120 27-NOV-19 Antimorum (Al)-Dissolved 99.2 % 80-120 27-NOV-19 Antimorum (Sb)-Dissolved 98.4 % 80-120 27-NOV-19 Barium (Ba)-Dissolved 98.4 % 80-120 27-NOV-19 Beryllium (Bi)-Dissolved 96.8 % 80-120 27-NOV-19 Beryllium (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Born (Bj)-Dissolved 96.8 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 99.0 % 80-120 27-NOV-19 Chornium (Cr)-Dissolved 96.0 80-1	` ,		0.00095						
Zirconium (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 27-NOV-19 WG3229160-2 LCS Aluminum (Al)-Dissolved 99.2 % 80-120 27-NOV-19 Antimony (Sb)-Dissolved 91.8 % 80-120 27-NOV-19 Arsenic (As)-Dissolved 98.4 % 80-120 27-NOV-19 Barium (Ba)-Dissolved 100.1 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 96.0 % 80-120 27-NOV-19 Cadmium (Ca)-Dissolved 96.0 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 96.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0	Zinc (Zn)-Dissolved		0.0012						
WG3229160-2 LCS Aluminum (Al)-Dissolved 99.2 % 80-120 27-NOV-19 Aluminum (Al)-Dissolved 91.8 % 80-120 27-NOV-19 Arsenic (As)-Dissolved 98.4 % 80-120 27-NOV-19 Barium (Ba)-Dissolved 96.8 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 96.0 % 80-120 27-NOV-19 Cadnium (Cd)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Cesium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Chornium (Cr)-Dissolved 96.0 % 80-120 27-NOV-19 Chornium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Chornium (Cr)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 96.0 % 80-120 27-NOV-19 Iron (Fe)-	Zirconium (Zr)-Dissolved	I	<0.00020	<0.00020	RPD-NA				
Aluminum (Al)-Dissolved 99.2 % 80-120 27-NOV-19 Antimory (Sb)-Dissolved 91.8 % 80-120 27-NOV-19 Arsenic (As)-Dissolved 98.4 % 80-120 27-NOV-19 Barium (Ba)-Dissolved 100.1 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Cadicium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 93.6 % 80-120 27-NOV-19 Chornium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 96.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.0	WG3229160-2 LCS					•		-	
Arsenic (As)-Dissolved 98.4 % 80-120 27-NOV-19 Barium (Ba)-Dissolved 100.1 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 93.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 96.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Manganesie (Mn)-Dissolved 91.0		I		99.2		%		80-120	27-NOV-19
Barium (Ba)-Dissolved 100.1 % 80-120 27-NOV-19 Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 91.9 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 91.0 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 92.7 %<	Antimony (Sb)-Dissolved	I		91.8		%		80-120	27-NOV-19
Beryllium (Be)-Dissolved 96.8 % 80-120 27-NOV-19 Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Cesium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 96.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 91.9 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % <td>Arsenic (As)-Dissolved</td> <td></td> <td></td> <td>98.4</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>27-NOV-19</td>	Arsenic (As)-Dissolved			98.4		%		80-120	27-NOV-19
Bismuth (Bi)-Dissolved 88.2 % 80-120 27-NOV-19 Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Mall (Mg)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 93.7 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 98.0	Barium (Ba)-Dissolved			100.1		%		80-120	27-NOV-19
Boron (B)-Dissolved 100.0 % 80-120 27-NOV-19 Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 91.9 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 91.0 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 92.7 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 80-12	Beryllium (Be)-Dissolved	l		96.8		%		80-120	27-NOV-19
Cadmium (Cd)-Dissolved 96.0 % 80-120 27-NOV-19 Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 93.7 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 98.0 % 80-120 27-NOV-19 Potassium (K)-Dissolved 97.9	Bismuth (Bi)-Dissolved			88.2		%		80-120	27-NOV-19
Calcium (Ca)-Dissolved 93.3 % 80-120 27-NOV-19 Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved	Boron (B)-Dissolved			100.0		%		80-120	27-NOV-19
Cesium (Cs)-Dissolved 89.6 % 80-120 27-NOV-19 Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8	Cadmium (Cd)-Dissolved	d		96.0		%		80-120	27-NOV-19
Chromium (Cr)-Dissolved 99.0 % 80-120 27-NOV-19 Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Calcium (Ca)-Dissolved			93.3		%		80-120	27-NOV-19
Cobalt (Co)-Dissolved 96.0 % 80-120 27-NOV-19 Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 93.7 % 80-120 27-NOV-19 Mickel (Ni)-Dissolved 93.7 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 98.0 % 80-120 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Cesium (Cs)-Dissolved			89.6		%		80-120	27-NOV-19
Copper (Cu)-Dissolved 95.0 % 80-120 27-NOV-19 Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Chromium (Cr)-Dissolved	d		99.0		%		80-120	27-NOV-19
Iron (Fe)-Dissolved 96.4 % 80-120 27-NOV-19 Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 98.0 % 80-120 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Cobalt (Co)-Dissolved			96.0		%		80-120	27-NOV-19
Lead (Pb)-Dissolved 91.9 % 80-120 27-NOV-19 Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Copper (Cu)-Dissolved			95.0		%		80-120	27-NOV-19
Lithium (Li)-Dissolved 91.0 % 80-120 27-NOV-19 Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Iron (Fe)-Dissolved			96.4		%		80-120	27-NOV-19
Magnesium (Mg)-Dissolved 92.7 % 80-120 27-NOV-19 Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Lead (Pb)-Dissolved			91.9		%		80-120	27-NOV-19
Manganese (Mn)-Dissolved 101.0 % 80-120 27-NOV-19 Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Lithium (Li)-Dissolved			91.0		%		80-120	27-NOV-19
Molybdenum (Mo)-Dissolved 93.7 % 80-120 27-NOV-19 Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Magnesium (Mg)-Dissolv	/ed		92.7		%		80-120	27-NOV-19
Nickel (Ni)-Dissolved 98.0 % 80-120 27-NOV-19 Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Manganese (Mn)-Dissolv	ved		101.0		%		80-120	27-NOV-19
Phosphorus (P)-Dissolved 103.7 % 70-130 27-NOV-19 Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Molybdenum (Mo)-Disso	lved		93.7		%		80-120	27-NOV-19
Potassium (K)-Dissolved 97.9 % 80-120 27-NOV-19 Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Nickel (Ni)-Dissolved			98.0		%		80-120	27-NOV-19
Rubidium (Rb)-Dissolved 97.6 % 80-120 27-NOV-19 Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Phosphorus (P)-Dissolve	ed		103.7		%		70-130	27-NOV-19
Selenium (Se)-Dissolved 94.8 % 80-120 27-NOV-19	Potassium (K)-Dissolved	I		97.9		%		80-120	27-NOV-19
	Rubidium (Rb)-Dissolved	t		97.6		%		80-120	27-NOV-19
Silicon (Si)-Dissolved 104.0 % 60-140 27-NOV-19	Selenium (Se)-Dissolved	i		94.8		%		80-120	27-NOV-19
	Silicon (Si)-Dissolved			104.0		%		60-140	27-NOV-19



Workorder: L2387633 Report Date: 05-DEC-19 Page 4 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4926426								
WG3229160-2 LCS Silver (Ag)-Dissolved			87.9		%		80-120	27-NOV-19
Sodium (Na)-Dissolved			96.3		%		80-120	27-NOV-19 27-NOV-19
Strontium (Sr)-Dissolved	1		92.0		%		80-120	27-NOV-19 27-NOV-19
Sulfur (S)-Dissolved	4		95.8		%		80-120	27-NOV-19 27-NOV-19
Tellurium (Te)-Dissolved	4		89.6		%		80-120	27-NOV-19 27-NOV-19
Thallium (TI)-Dissolved	4		90.2		%		80-120	27-NOV-19 27-NOV-19
Thorium (Th)-Dissolved			86.5		%		80-120	27-NOV-19 27-NOV-19
Tin (Sn)-Dissolved			91.1		%		80-120	27-NOV-19 27-NOV-19
Titanium (Ti)-Dissolved			96.3		%		80-120	27-NOV-19 27-NOV-19
Tungsten (W)-Dissolved	I		91.9		%		80-120	27-NOV-19 27-NOV-19
Uranium (U)-Dissolved	•		93.9		%		80-120	27-NOV-19
Vanadium (V)-Dissolved	l		97.7		%		80-120	27-NOV-19
Zinc (Zn)-Dissolved			99.3		%		80-120	27-NOV-19
Zirconium (Zr)-Dissolved	d		92.7		%		80-120	27-NOV-19
WG3229160-1 MB							00 120	27 110 7 10
Aluminum (Al)-Dissolved	t		<0.0010		mg/L		0.001	27-NOV-19
Antimony (Sb)-Dissolved	t		<0.00010		mg/L		0.0001	27-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-19
Beryllium (Be)-Dissolved	d		<0.00010		mg/L		0.0001	27-NOV-19
Bismuth (Bi)-Dissolved			<0.00005	0	mg/L		0.00005	27-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-19
Cadmium (Cd)-Dissolve	d		<0.00000	5 C	mg/L		0.000005	27-NOV-19
Calcium (Ca)-Dissolved			< 0.050		mg/L		0.05	27-NOV-19
Cesium (Cs)-Dissolved			<0.00001	0	mg/L		0.00001	27-NOV-19
Chromium (Cr)-Dissolve	ed		<0.00010		mg/L		0.0001	27-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-19
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	27-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-19
Magnesium (Mg)-Dissol	ved		<0.0050		mg/L		0.005	27-NOV-19
Manganese (Mn)-Dissol	ved		<0.00010		mg/L		0.0001	27-NOV-19
Molybdenum (Mo)-Disso	olved		<0.00005	0	mg/L		0.00005	27-NOV-19



Workorder: L2387633 Report Date: 05-DEC-19 Page 5 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R492642	26							
WG3229160-1 MB Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-19
Phosphorus (P)-Disso	olved		< 0.050		mg/L		0.05	27-NOV-19
Potassium (K)-Dissol	ved		<0.050		mg/L		0.05	27-NOV-19
Rubidium (Rb)-Dissol	lved		<0.00020		mg/L		0.0002	27-NOV-19
Selenium (Se)-Dissol	ved		<0.00005	0	mg/L		0.00005	27-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-19
Silver (Ag)-Dissolved			<0.00001	0	mg/L		0.00001	27-NOV-19
Sodium (Na)-Dissolve	ed		<0.050		mg/L		0.05	27-NOV-19
Strontium (Sr)-Dissol	ved		<0.00020		mg/L		0.0002	27-NOV-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-NOV-19
Tellurium (Te)-Dissol	ved		<0.00020		mg/L		0.0002	27-NOV-19
Thallium (TI)-Dissolve	ed		<0.00001	0	mg/L		0.00001	27-NOV-19
Thorium (Th)-Dissolv	ed		<0.00010		mg/L		0.0001	27-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-19
Titanium (Ti)-Dissolve	ed		<0.00030		mg/L		0.0003	27-NOV-19
Tungsten (W)-Dissolv	ved		<0.00010		mg/L		0.0001	27-NOV-19
Uranium (U)-Dissolve	ed		<0.00001	0	mg/L		0.00001	27-NOV-19
Vanadium (V)-Dissolv	ved		<0.00050		mg/L		0.0005	27-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-19
Zirconium (Zr)-Dissol	ved		<0.00020		mg/L		0.0002	27-NOV-19
WG3229160-4 MS Aluminum (Al)-Dissol	ved	L2388070-2	94.2		%		70-130	27-NOV-19
Antimony (Sb)-Dissol			93.2		%		70-130	27-NOV-19
Arsenic (As)-Dissolve			100.9		%		70-130	27-NOV-19
Barium (Ba)-Dissolve			N/A	MS-B	%		-	27-NOV-19
Beryllium (Be)-Dissol			92.7		%		70-130	27-NOV-19
Bismuth (Bi)-Dissolve			80.0		%		70-130	27-NOV-19
Boron (B)-Dissolved			85.2		%		70-130	27-NOV-19
Cadmium (Cd)-Disso	lved		91.7		%		70-130	27-NOV-19
Calcium (Ca)-Dissolv			N/A	MS-B	%		-	27-NOV-19
Cesium (Cs)-Dissolve			89.7		%		70-130	27-NOV-19
Chromium (Cr)-Disso			94.2		%		70-130	27-NOV-19
Cobalt (Co)-Dissolved			93.2		%		70-130	27-NOV-19
Copper (Cu)-Dissolve			90.1		%		70-130	27-NOV-19
, ,								- · · ·



Workorder: L2387633 Report Date: 05-DEC-19 Page 6 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R492642	:6							
WG3229160-4 MS		L2388070-2	00.0		%		70.400	07.1101/ 40
Iron (Fe)-Dissolved Lead (Pb)-Dissolved			92.3 85.2		%		70-130	27-NOV-19
Lithium (Li)-Dissolved			89.2		%		70-130	27-NOV-19
,			09.2 N/A	MC D	%		70-130	27-NOV-19
Magnesium (Mg)-Diss				MS-B			-	27-NOV-19
Manganese (Mn)-Diss			N/A	MS-B	%		-	27-NOV-19
Molybdenum (Mo)-Dis	ssoivea		94.0		%		70-130	27-NOV-19
Nickel (Ni)-Dissolved			92.4		%		70-130	27-NOV-19
Phosphorus (P)-Disso			108.1		%		70-130	27-NOV-19
Potassium (K)-Dissolv			N/A	MS-B	%		-	27-NOV-19
Rubidium (Rb)-Dissol			87.0		%		70-130	27-NOV-19
Selenium (Se)-Dissolv	/ed		96.9		%		70-130	27-NOV-19
Silicon (Si)-Dissolved			94.2		%		70-130	27-NOV-19
Silver (Ag)-Dissolved			80.0		%		70-130	27-NOV-19
Sodium (Na)-Dissolve	ed		N/A	MS-B	%		-	27-NOV-19
Strontium (Sr)-Dissolv	ved		N/A	MS-B	%		-	27-NOV-19
Sulfur (S)-Dissolved			96.9		%		70-130	27-NOV-19
Tellurium (Te)-Dissolv	/ed		95.8		%		70-130	27-NOV-19
Thallium (TI)-Dissolve	d		82.8		%		70-130	27-NOV-19
Thorium (Th)-Dissolve	ed		90.1		%		70-130	27-NOV-19
Tin (Sn)-Dissolved			91.9		%		70-130	27-NOV-19
Titanium (Ti)-Dissolve	ed		102.6		%		70-130	27-NOV-19
Tungsten (W)-Dissolv	red		91.3		%		70-130	27-NOV-19
Uranium (U)-Dissolve	d		87.2		%		70-130	27-NOV-19
Vanadium (V)-Dissolv	red		97.9		%		70-130	27-NOV-19
Zinc (Zn)-Dissolved			96.8		%		70-130	27-NOV-19
Zirconium (Zr)-Dissolv	/ed		96.4		%		70-130	27-NOV-19
NH3-F-VA	Water							
Batch R493005	52							
WG3231298-3 DUF Ammonia, Total (as N		L2388611-1 0.0187	0.0194		mg/L	3.5	20	02-DEC-19
WG3231298-2 LCS Ammonia, Total (as N			95.0		%		85-115	02-DEC-19
WG3231298-1 MB Ammonia, Total (as N)		<0.0050		mg/L		0.005	02-DEC-19



Workorder: L2387633

Report Date: 05-DEC-19

Page 7 of 9

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-VA	Water						·	
Batch R4927030								
WG3228936-2 LCS Nitrite (as N)			100.5		%		90-110	26-NOV-19
WG3228936-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-19
NO3-L-IC-N-VA	Water							
Batch R4927030								
WG3228936-3 DUP Nitrate (as N)		L2387502-4 0.267	0.261		mg/L	2.5	20	26-NOV-19
WG3228936-2 LCS Nitrate (as N)			100.7		%		90-110	26-NOV-19
WG3228936-1 MB Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-19
WG3228936-4 MS Nitrate (as N)		L2387502-1	N/A	MS-B	%		-	26-NOV-19
PH-PCT-VA	Water							
Batch R4927267								
WG3228940-2 CRM pH		VA-PH7-BUF	7.01		рН		6.9-7.1	26-NOV-19
WG3228940-4 DUP pH		L2387632-3 8.07	8.05	J	рН	0.02	0.3	26-NOV-19
SO4-IC-N-VA	Water							
Batch R4927030								
WG3228936-2 LCS Sulfate (SO4)			100.2		%		90-110	26-NOV-19
WG3228936-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-19
TDS-VA	Water							
Batch R4929219								
WG3230211-9 DUP Total Dissolved Solids		L2387379-1 473	478		mg/L	1.1	20	28-NOV-19
WG3230211-8 LCS Total Dissolved Solids			101.5		%		85-115	28-NOV-19
WG3230211-7 MB Total Dissolved Solids			<10		mg/L		10	28-NOV-19

Workorder: L2387633 Report Date: 05-DEC-19

GHD Limited Client: Page 8 of 9

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Legend:

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

Internal Reference Material IRM 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.

Workorder: L2387633 Report Date: 05-DEC-19

Client: GHD Limited

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	25-NOV-19 12:35	26-NOV-19 17:25	0.25	29	hours	EHTR-FM
	2	25-NOV-19 13:00	26-NOV-19 17:25	0.25	28	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2387633 were received on 26-NOV-19 09:30.

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 predetermined 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

Chain of Custody (COC) / Analytical Request Form

L2387633-COFC

vironmental

Canada Toll Free: 1 800 668 9878

,	www.alsglobal.com	70]																
Report To	Contact and company name below will app	ear on the final report		Report Format	/ Distribution			Select	Service	Level E	elow -	Contac	ct your	AM to	confirm	all E&	P TATs	(surcha	ges ma	y appl	у)
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Contact:	Airesse MacPhee Pinner Na	Vin	Quality Control	(QC) Report with R	eport 🗹 YES	□ NO	, \$£	4 day	[P4-20 ¹	%] 🗆		ENCY	1 Bus	siness	day [E	1 - 10	0%]				
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Street:	455 Phillip Street		Email 1 or Fax	airesse.macphee@	⊉ghd.com			ate and	Time Re	quired f	or all E&	P TAT	:			dd	-mmm-	yy hh:m	ım		
City/Province;	Waterloo, ON		Email 2	Laurie.Clark@ghd	.com, Natasha.T	url@ghd.com	For tes	ts that ça	n not be p	erformed	accordin	g to the	service	level sel	ected, you	will be o	ontacted.				
Postal Code:	N2L 3X2		Email 3	Michaela.Dyck@g	hd.com,Lainey.¥	ong@ghd.com							Ana	lysis I	Reques	t					
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GHD Limited

ATTN: Airesse MacPhee # 400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Date Received: 20-NOV-19

Report Date: 27-NOV-19 17:42 (MT)

Version: FINAL

Client Phone: 613-727-0510

Certificate of Analysis

Lab Work Order #: L2385413Project P.O. #: 73515713-2
Job Reference: 056484-52

C of C Numbers: Legal Site Desc:

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



PAGE 2 of 9 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385413-1 WS-56484-191119-NT-01 Sampled By: N. Turl on 19-NOV-19 @ 10:15 Matrix: SW							
Physical Tests							
Conductivity	29.0		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	8.53		0.50	mg/L		22-NOV-19	
Hardness (as CaCO3), from total Ca/Mg	8.70		0.50	mg/L		25-NOV-19	
рН	7.00		0.10	pН		21-NOV-19	R4920107
Total Dissolved Solids	27		10	mg/L		20-NOV-19	R4919799
Anions and Nutrients				-			
Alkalinity, Bicarbonate (as CaCO3)	6.9		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	6.9		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	0.0051		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	3.46		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.0097		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.0097		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	0.97		0.30	mg/L		21-NOV-19	R4920286
Total Metals							
Aluminum (Al)-Total	0.0458		0.0030	mg/L		21-NOV-19	R4919320
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Arsenic (As)-Total	0.00028		0.00010	mg/L		21-NOV-19	R4919320
Barium (Ba)-Total	0.00132		0.00010	mg/L		21-NOV-19	R4919320
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		21-NOV-19	R4919320
Boron (B)-Total	<0.010		0.010	mg/L		21-NOV-19	R4919320
Cadmium (Cd)-Total	0.0000052		0.0000050	mg/L		22-NOV-19	R4921148
Calcium (Ca)-Total	2.01		0.050	mg/L		21-NOV-19	R4919320
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R4919320
Chromium (Cr)-Total	0.00014		0.00010	mg/L		21-NOV-19	R4919320
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Copper (Cu)-Total	0.00061		0.00050	mg/L		21-NOV-19	R4919320
Iron (Fe)-Total	0.062		0.010	mg/L		21-NOV-19	R4919320
Lead (Pb)-Total	0.000062		0.000050	mg/L		21-NOV-19	R4919320
Lithium (Li)-Total	<0.0010		0.0010	mg/L		21-NOV-19	R4919320
Magnesium (Mg)-Total	0.894		0.0050	mg/L		21-NOV-19	R4919320
Manganese (Mn)-Total	0.00523		0.00010	mg/L		21-NOV-19	R4919320
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		21-NOV-19	R4919230
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		21-NOV-19	R4919320
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		21-NOV-19	R4919320
Phosphorus (P)-Total	<0.050		0.050	mg/L		21-NOV-19	R4919320
Potassium (K)-Total	0.123		0.050	mg/L		21-NOV-19	R4919320

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

PAGE 3 of 9 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385413-1 WS-56484-191119-NT-01 Sampled By: N. Turl on 19-NOV-19 @ 10:15 Matrix: SW							
Total Metals							
Rubidium (Rb)-Total	0.00029		0.00020	mg/L		21-NOV-19	R4919320
Selenium (Se)-Total	0.000058		0.000050	mg/L		22-NOV-19	R4921148
Silicon (Si)-Total	1.88		0.10	mg/L		21-NOV-19	R4919320
Silver (Ag)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R4919320
Sodium (Na)-Total	2.65		0.050	mg/L		21-NOV-19	R4919320
Strontium (Sr)-Total	0.00896		0.00020	mg/L		21-NOV-19	R4919320
Sulfur (S)-Total	<0.50		0.50	mg/L		21-NOV-19	R4919320
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		21-NOV-19	R4919320
Thallium (TI)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R4919320
Thorium (Th)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Tin (Sn)-Total	0.00016		0.00010	mg/L		21-NOV-19	R4919320
Titanium (Ti)-Total	0.00180		0.00030	mg/L		21-NOV-19	R4919320
Tungsten (W)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Uranium (U)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R4919320
Vanadium (V)-Total	<0.00050		0.00050	mg/L		21-NOV-19	R4919320
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		21-NOV-19	R4919320
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		21-NOV-19	R4919320
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R4919454
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919113
Aluminum (Al)-Dissolved	0.0443		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Barium (Ba)-Dissolved	0.00126		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921688
Cadmium (Cd)-Dissolved	0.0000253	DTMF	0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Calcium (Ca)-Dissolved	1.98		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Copper (Cu)-Dissolved	0.00065		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Iron (Fe)-Dissolved	0.049		0.010	mg/L	20-NOV-19	22-NOV-19	R4921688
Lead (Pb)-Dissolved	0.000054		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Magnesium (Mg)-Dissolved	0.871		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921688
Manganese (Mn)-Dissolved	0.00305		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	21-NOV-19	R4919230
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921688

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385413-1 WS-56484-191119-NT-01 Sampled By: N. Turl on 19-NOV-19 @ 10:15 Matrix: SW							
Dissolved Metals							
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Potassium (K)-Dissolved	0.131		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Selenium (Se)-Dissolved	0.000073		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Silicon (Si)-Dissolved	1.88		0.050	mg/L	20-NOV-19	22-NOV-19	
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Sodium (Na)-Dissolved	2.68		0.050	mg/L	20-NOV-19		R4921688
Strontium (Sr)-Dissolved	0.00909		0.00020	mg/L	20-NOV-19	22-NOV-19	
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	20-NOV-19	22-NOV-19	R4921688
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Tin (Sn)-Dissolved	0.00025		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Titanium (Ti)-Dissolved	0.00056		0.00030	mg/L	20-NOV-19	22-NOV-19	
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Uranium (U)-Dissolved	<0.00010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
L2385413-2 WS-56484-191119-NT-02 Sampled By: N. Turl on 19-NOV-19 @ 10:30 Matrix: SW							
Physical Tests							
Conductivity	28.7		2.0	uS/cm		21-NOV-19	R4920107
Hardness (as CaCO3), dissolved	7.97		0.50	mg/L		22-NOV-19	
Hardness (as CaCO3), from total Ca/Mg	8.20		0.50	mg/L		25-NOV-19	
pH	7.03		0.10	рН		21-NOV-19	R4920107
Total Dissolved Solids Anions and Nutrients	31		10	mg/L		20-NOV-19	R4919799
Alkalinity, Bicarbonate (as CaCO3)	7.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-19	R4920107
Alkalinity, Total (as CaCO3)	7.0		1.0	mg/L		21-NOV-19	R4920107
Ammonia, Total (as N)	0.0086		0.0050	mg/L		21-NOV-19	R4921471
Chloride (CI)	3.42		0.50	mg/L		21-NOV-19	R4920286
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4920286
Nitrate and Nitrite (as N)	0.0096		0.0051	mg/L		22-NOV-19	
Nitrate (as N)	0.0096		0.0050	mg/L		21-NOV-19	R4920286
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4920286
Sulfate (SO4)	0.94		0.30	mg/L		21-NOV-19	R4920286
Total Metals							
Aluminum (Al)-Total	0.0340		0.0030	mg/L		21-NOV-19	R4919320

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2385413-2 WS-56484-191119-NT-02 Sampled By: N. Turl on 19-NOV-19 @ 10:30 Matrix: SW							
Total Metals							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R4919320
Arsenic (As)-Total	0.00013		0.00010	mg/L		21-NOV-19	R491932
Barium (Ba)-Total	0.00139		0.00010	mg/L		21-NOV-19	R491932
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R491932
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		21-NOV-19	R491932
Boron (B)-Total	<0.010		0.010	mg/L		21-NOV-19	R491932
Cadmium (Cd)-Total	0.0000467		0.0000050	mg/L		22-NOV-19	R492114
Calcium (Ca)-Total	1.84		0.050	mg/L		21-NOV-19	R491932
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R491932
Chromium (Cr)-Total	0.00011		0.00010	mg/L		21-NOV-19	R491932
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R491932
Copper (Cu)-Total	0.00051		0.00050	mg/L		21-NOV-19	R491932
Iron (Fe)-Total	0.057		0.010	mg/L		21-NOV-19	R491932
Lead (Pb)-Total	<0.000050		0.000050	mg/L		21-NOV-19	R491932
Lithium (Li)-Total	<0.0010		0.0010	mg/L		21-NOV-19	R491932
Magnesium (Mg)-Total	0.873		0.0050	mg/L		21-NOV-19	R491932
Manganese (Mn)-Total	0.00530		0.00010	mg/L		21-NOV-19	R491932
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		21-NOV-19	R491923
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		21-NOV-19	R491932
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		21-NOV-19	R491932
Phosphorus (P)-Total	<0.050		0.050	mg/L		21-NOV-19	R491932
Potassium (K)-Total	0.122		0.050	mg/L		21-NOV-19	R491932
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L		21-NOV-19	R491932
Selenium (Se)-Total	<0.000050		0.000050	mg/L		22-NOV-19	R492114
Silicon (Si)-Total	1.84		0.10	mg/L		21-NOV-19	R491932
Silver (Ag)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R491932
Sodium (Na)-Total	2.76		0.050	mg/L		21-NOV-19	R491932
Strontium (Sr)-Total	0.00862		0.00020	mg/L		21-NOV-19	R491932
Sulfur (S)-Total	<0.50		0.50	mg/L		21-NOV-19	R491932
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		21-NOV-19	
Thallium (TI)-Total	<0.000010		0.000010	mg/L		21-NOV-19	R491932
Thorium (Th)-Total	<0.00010		0.00010	mg/L		21-NOV-19	R491932
Tin (Sn)-Total	0.00021		0.00010	mg/L		21-NOV-19	
Titanium (Ti)-Total	0.00044		0.00030	mg/L		21-NOV-19	
Tungsten (W)-Total	<0.00010		0.00010	mg/L		21-NOV-19	
Uranium (U)-Total	<0.000010		0.000010	mg/L		21-NOV-19	
Vanadium (V)-Total	<0.00050		0.00050	mg/L		21-NOV-19	R491932
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		21-NOV-19	R491932
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		21-NOV-19	R491932
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					21-NOV-19	R491945

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385413-2 WS-56484-191119-NT-02 Sampled By: N. Turl on 19-NOV-19 @ 10:30 Matrix: SW							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4919113
Aluminum (AI)-Dissolved	0.0332		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Barium (Ba)-Dissolved	0.00129		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	22-NOV-19	R4921688
Cadmium (Cd)-Dissolved	0.0000598		0.0000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Calcium (Ca)-Dissolved	1.82		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Copper (Cu)-Dissolved	0.00087		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Iron (Fe)-Dissolved	0.048		0.010	mg/L	20-NOV-19	22-NOV-19	R4921688
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Magnesium (Mg)-Dissolved	0.835		0.0050	mg/L	20-NOV-19	22-NOV-19	R4921688
Manganese (Mn)-Dissolved	0.00315		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	21-NOV-19	21-NOV-19	R4919230
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921688
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Potassium (K)-Dissolved	0.121		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Selenium (Se)-Dissolved	0.000051		0.000050	mg/L	20-NOV-19	22-NOV-19	R4921688
Silicon (Si)-Dissolved	1.82		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Sodium (Na)-Dissolved	2.58		0.050	mg/L	20-NOV-19	22-NOV-19	R4921688
Strontium (Sr)-Dissolved	0.00851		0.00020	mg/L	20-NOV-19		R4921688
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	20-NOV-19	22-NOV-19	R4921688
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Tin (Sn)-Dissolved	0.00043	DTMF	0.00010	mg/L	20-NOV-19	22-NOV-19	R4921688
Titanium (Ti)-Dissolved	0.00033		0.00030	mg/L	20-NOV-19		R4921688
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	22-NOV-19	
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	22-NOV-19	R4921688
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	22-NOV-19	R4921688
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	22-NOV-19	R4921688
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	22-NOV-19	R4921688

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385413-2 WS-56484-191119-NT-02							
Sampled By: N. Turl on 19-NOV-19 @ 10:30 Matrix: SW							
Dissolved Metals							
* Refer to Referenced Information for Qualifiers (if any) and							

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2385413-1, -2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2385413-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
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-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity	

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water	EPA 300.0
		(Calculation)	

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EC-SCREEN-VA

Water

Conductivity Screen (Internal Use Only)

APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

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

HARDNESS-D-CALC-VA Water Hardness (as CaCO3), dissolved APHA 2340B

"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

HARDNESS-T-CALC-VA Water Hardness (as CaCO3), from total APHA 2340B Ca/Mg

"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total (acid digested) Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

HG-D-CVAA-VA

Water

Diss. Mercury in Water by CVAAS

APHA 3030B/EPA 1631E (mod)

or CVAFS

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

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

Reference Information

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or CVAFS

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

MET-D-CCMS-VA

Water

Dissolved Metals in Water by CRC

APHA 3030B/6020A (mod)

ICPMS

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA

Water

Total Metals in Water by CRC

EPA 200.2/6020A (mod)

ICPMS

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.

NH3-F-VA

Water

Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA

Water

Nitrite in Water by IC (Low Level)

EPA 300.1 (mod)

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

NO3-L-IC-N-VA

Water

Nitrate in Water by IC (Low Level)

EPA 300.1 (mod)

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

PH-PCT-VA

Water

pH by Meter (Automated)

APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA

Water

Sulfate in Water by IC

EPA 300.1 (mod)

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

TDS-VA

Water

Total Dissolved Solids by

APHA 2540 C - GRAVIMETRIC

Gravimetric

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.

** 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

VA

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2385413 Report Date: 27-NOV-19 Page 1 of 15

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	Water							
Batch R4920107 WG3224214-4 DUP		L2385163-13						
Alkalinity, Total (as CaC	O3)	1070	1070		mg/L	0.1	20	21-NOV-19
WG3224214-3 LCS Alkalinity, Total (as CaC	O3)		106.4		%		85-115	21-NOV-19
WG3224214-1 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	21-NOV-19
CL-IC-N-VA	Water							
Batch R4920286								
WG3224191-3 DUP		L2385422-3						
Chloride (CI)		5.5	5.5		mg/L	0.4	20	21-NOV-19
WG3224191-2 LCS Chloride (CI)			102.3		%		90-110	21-NOV-19
WG3224191-1 MB Chloride (CI)			<0.50		mg/L		0.5	21-NOV-19
EC-PCT-VA	Water							
Batch R4920107								
WG3224214-4 DUP		L2385163-13						
Conductivity		2180	2190		uS/cm	0.5	10	21-NOV-19
WG3224214-3 LCS Conductivity			98.9		%		90-110	21-NOV-19
WG3224214-1 MB Conductivity			<2.0		uS/cm		2	21-NOV-19
F-IC-N-VA	Water							
Batch R4920286								
WG3224191-3 DUP Fluoride (F)		L2385422-3 <0.10	<0.10	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224191-2 LCS Fluoride (F)			101.9		%		90-110	21-NOV-19
WG3224191-1 MB Fluoride (F)			<0.020		mg/L		0.02	21-NOV-19
HG-D-CVAA-VA	Water							
Batch R4919230								
WG3224649-7 DUP Mercury (Hg)-Dissolved		L2384766-2 <0.0000050	<0.000005	C RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224649-6 LCS Mercury (Hg)-Dissolved			96.1		%		80-120	21-NOV-19
WG3224649-5 MB								



Workorder: L2385413 Report Date: 27-NOV-19 Page 2 of 15

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA	Water							
Batch R4919230 WG3224649-5 MB Mercury (Hg)-Dissolved			<0.0000050	r	mg/L		0.000005	21-NOV-19
WG3224649-8 MS Mercury (Hg)-Dissolved		L2384766-1	95.0		%		70-130	21-NOV-19 21-NOV-19
HG-T-CVAA-VA	Water							
Batch R4919230 WG3224305-11 DUP Mercury (Hg)-Total		L2383910-16 <0.000050	<0.0000050	C RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224305-7 DUP Mercury (Hg)-Total		L2384766-2 0.0000053	0.0000060		mg/L	11	20	21-NOV-19
WG3224305-9 DUP Mercury (Hg)-Total		L2384735-6 < 0.0000050	<0.0000050	C RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224305-2 LCS Mercury (Hg)-Total			95.9		%		80-120	21-NOV-19
WG3224305-1 MB Mercury (Hg)-Total			<0.0000050	C	mg/L		0.000005	21-NOV-19
WG3224305-10 MS Mercury (Hg)-Total		L2383910-15	101.3		%		70-130	21-NOV-19
WG3224305-4 MS Mercury (Hg)-Total		L2383943-3	96.0		%		70-130	21-NOV-19
WG3224305-5 MS Mercury (Hg)-Total		L2383072-1	77.4		%		70-130	21-NOV-19
WG3224305-6 MS Mercury (Hg)-Total		L2384766-1	97.5		%		70-130	21-NOV-19
WG3224305-8 MS Mercury (Hg)-Total		L2384735-5	95.9		%		70-130	21-NOV-19
MET-D-CCMS-VA	Water							
Batch R4921688								
WG3224135-3 DUP Aluminum (Al)-Dissolved	d	L2384727-1 0.0263	0.0257		mg/L	2.3	20	22-NOV-19
Antimony (Sb)-Dissolved	d	0.00029	0.00029		mg/L	0.3	20	22-NOV-19
Arsenic (As)-Dissolved		0.00050	0.00053		mg/L	4.6	20	22-NOV-19
Barium (Ba)-Dissolved		0.134	0.131		mg/L	2.3	20	22-NOV-19
Beryllium (Be)-Dissolved	i	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-NOV-19
Boron (B)-Dissolved		0.024	0.026		mg/L	6.5	20	22-NOV-19
Cadmium (Cd)-Dissolve	d	0.0000893	0.0000787		mg/L	13	20	22-NOV-19



Workorder: L2385413 Report Date: 27-NOV-19 Page 3 of 15

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test Ma	trix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Wa	iter						
Batch R4921688							
WG3224135-3 DUP Calcium (Ca)-Dissolved	L2384727-1 118	125		mg/L	6.1	20	22-NOV-19
Cesium (Cs)-Dissolved	0.000014	0.000013		mg/L	7.5	20	22-NOV-19
Chromium (Cr)-Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Cobalt (Co)-Dissolved	0.00048	0.00047		mg/L	1.5	20	22-NOV-19
Copper (Cu)-Dissolved	0.00074	0.00068		mg/L	9.2	20	22-NOV-19
Iron (Fe)-Dissolved	0.024	0.024		mg/L	1.3	20	22-NOV-19
Lead (Pb)-Dissolved	0.000095	0.000092		mg/L	3.1	20	22-NOV-19
Lithium (Li)-Dissolved	0.0155	0.0164		mg/L	5.3	20	22-NOV-19
Magnesium (Mg)-Dissolved	37.0	36.4		mg/L	1.7	20	22-NOV-19
Manganese (Mn)-Dissolved	0.153	0.151		mg/L	1.4	20	22-NOV-19
Molybdenum (Mo)-Dissolved	0.00130	0.00139		mg/L	6.7	20	22-NOV-19
Nickel (Ni)-Dissolved	0.00313	0.00314		mg/L	0.4	20	22-NOV-19
Phosphorus (P)-Dissolved	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	22-NOV-19
Potassium (K)-Dissolved	4.38	4.35		mg/L	0.8	20	22-NOV-19
Rubidium (Rb)-Dissolved	0.00154	0.00159		mg/L	3.0	20	22-NOV-19
Selenium (Se)-Dissolved	0.00387	0.00408		mg/L	5.3	20	22-NOV-19
Silicon (Si)-Dissolved	7.51	7.52		mg/L	0.1	20	22-NOV-19
Silver (Ag)-Dissolved	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-NOV-19
Sodium (Na)-Dissolved	54.3	54.3		mg/L	0.1	20	22-NOV-19
Strontium (Sr)-Dissolved	0.338	0.356		mg/L	5.3	20	22-NOV-19
Sulfur (S)-Dissolved	34.9	34.5		mg/L	1.0	20	22-NOV-19
Tellurium (Te)-Dissolved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-NOV-19
Thallium (TI)-Dissolved	0.000045	0.000045		mg/L	0.5	20	22-NOV-19
Thorium (Th)-Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Tin (Sn)-Dissolved	0.00676	0.00702		mg/L	3.7	20	22-NOV-19
Titanium (Ti)-Dissolved	<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	22-NOV-19
Tungsten (W)-Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-19
Uranium (U)-Dissolved	0.00418	0.00430		mg/L	2.9	20	22-NOV-19
Vanadium (V)-Dissolved	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-NOV-19
Zinc (Zn)-Dissolved	0.0033	0.0041		mg/L	20	20	22-NOV-19
Zirconium (Zr)-Dissolved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-NOV-19
WG3224135-2 LCS Aluminum (Al)-Dissolved		107.5		%		80-120	22-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R492168	8							
WG3224135-2 LCS			00.4		0/			
Antimony (Sb)-Dissolv			93.1		%		80-120	22-NOV-19
Arsenic (As)-Dissolved			96.8		%		80-120	22-NOV-19
Barium (Ba)-Dissolved			99.4		%		80-120	22-NOV-19
Beryllium (Be)-Dissolv			97.2		%		80-120	22-NOV-19
Bismuth (Bi)-Dissolved	a		95.1		%		80-120	22-NOV-19
Boron (B)-Dissolved			96.9		%		80-120	22-NOV-19
Cadmium (Cd)-Dissol			95.7		%		80-120	22-NOV-19
Calcium (Ca)-Dissolve			98.1		%		80-120	22-NOV-19
Cesium (Cs)-Dissolve			95.3		%		80-120	22-NOV-19
Chromium (Cr)-Dissol			101.9		%		80-120	22-NOV-19
Cobalt (Co)-Dissolved			97.7		%		80-120	22-NOV-19
Copper (Cu)-Dissolve	d		95.1		%		80-120	22-NOV-19
Iron (Fe)-Dissolved			97.6		%		80-120	22-NOV-19
Lead (Pb)-Dissolved			97.1		%		80-120	22-NOV-19
Lithium (Li)-Dissolved			95.5		%		80-120	22-NOV-19
Magnesium (Mg)-Diss	solved		98.4		%		80-120	22-NOV-19
Manganese (Mn)-Diss	solved		100.6		%		80-120	22-NOV-19
Molybdenum (Mo)-Dis	ssolved		97.9		%		80-120	22-NOV-19
Nickel (Ni)-Dissolved			96.4		%		80-120	22-NOV-19
Phosphorus (P)-Disso	lved		99.4		%		70-130	22-NOV-19
Potassium (K)-Dissolv	ved		101.3		%		80-120	22-NOV-19
Rubidium (Rb)-Dissolv	ved		100.2		%		80-120	22-NOV-19
Selenium (Se)-Dissolv	/ed		93.5		%		80-120	22-NOV-19
Silicon (Si)-Dissolved			103.8		%		60-140	22-NOV-19
Silver (Ag)-Dissolved			95.3		%		80-120	22-NOV-19
Sodium (Na)-Dissolve	d		104.3		%		80-120	22-NOV-19
Strontium (Sr)-Dissolv	red		98.0		%		80-120	22-NOV-19
Sulfur (S)-Dissolved			92.0		%		80-120	22-NOV-19
Tellurium (Te)-Dissolv	red .		90.3		%		80-120	22-NOV-19
Thallium (TI)-Dissolve	d		98.2		%		80-120	22-NOV-19
Thorium (Th)-Dissolve	ed		96.1		%		80-120	22-NOV-19
Tin (Sn)-Dissolved			94.3		%		80-120	22-NOV-19
Titanium (Ti)-Dissolve	ed		93.5		%		80-120	22-NOV-19
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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R492168	38							
WG3224135-2 LCS			07.4		0/		00.400	00 NOV 40
Tungsten (W)-Dissolv			97.1		%		80-120	22-NOV-19
Uranium (U)-Dissolve			99.3		%		80-120	22-NOV-19
Vanadium (V)-Dissolv	/ea		101.0		%		80-120	22-NOV-19
Zinc (Zn)-Dissolved			113.1		%		80-120	22-NOV-19
Zirconium (Zr)-Dissol	ved		93.0		%		80-120	22-NOV-19
WG3224135-1 MB Aluminum (AI)-Dissol	ved		<0.0010		mg/L		0.001	22-NOV-19
Antimony (Sb)-Dissol			<0.00010		mg/L		0.0001	22-NOV-19
Arsenic (As)-Dissolve			<0.00010		mg/L		0.0001	22-NOV-19
Barium (Ba)-Dissolve			<0.00010		mg/L		0.0001	22-NOV-19
Beryllium (Be)-Dissol			<0.00010		mg/L		0.0001	22-NOV-19
Bismuth (Bi)-Dissolve			<0.00005	0	mg/L		0.00005	22-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-NOV-19
Cadmium (Cd)-Disso	lved		<0.00000	5C	mg/L		0.000005	22-NOV-19
Calcium (Ca)-Dissolv	ed		<0.050		mg/L		0.05	22-NOV-19
Cesium (Cs)-Dissolve			<0.00001	0	mg/L		0.00001	22-NOV-19
Chromium (Cr)-Disso			<0.00010		mg/L		0.0001	22-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-19
Copper (Cu)-Dissolve	ed		<0.00020		mg/L		0.0002	22-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-NOV-19
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	22-NOV-19
Lithium (Li)-Dissolved	i		<0.0010		mg/L		0.001	22-NOV-19
Magnesium (Mg)-Dis	solved		<0.0050		mg/L		0.005	22-NOV-19
Manganese (Mn)-Dis	solved		<0.00010		mg/L		0.0001	22-NOV-19
Molybdenum (Mo)-Di	ssolved		<0.00005	0	mg/L		0.00005	22-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-NOV-19
Phosphorus (P)-Disso	olved		< 0.050		mg/L		0.05	22-NOV-19
Potassium (K)-Dissol	ved		<0.050		mg/L		0.05	22-NOV-19
Rubidium (Rb)-Disso	lved		<0.00020		mg/L		0.0002	22-NOV-19
Selenium (Se)-Dissol	ved		<0.00005	0	mg/L		0.00005	22-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-NOV-19
Silver (Ag)-Dissolved			<0.00001	0	mg/L		0.00001	22-NOV-19
Sodium (Na)-Dissolve	ed		<0.050		mg/L		0.05	22-NOV-19
Strontium (Sr)-Dissol	ved		<0.00020		mg/L		0.0002	22-NOV-19
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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test Matri	x Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Wate	r						
Batch R4921688							
WG3224135-1 MB		0.50				0.5	
Sulfur (S)-Dissolved		<0.50		mg/L		0.5	22-NOV-19
Tellurium (Te)-Dissolved		<0.00020	`	mg/L		0.0002	22-NOV-19
Thallium (TI)-Dissolved		<0.000010	J	mg/L		0.00001	22-NOV-19
Thorium (Th)-Dissolved		<0.00010		mg/L		0.0001	22-NOV-19
Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	22-NOV-19
Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	22-NOV-19
Tungsten (W)-Dissolved		<0.00010		mg/L		0.0001	22-NOV-19
Uranium (U)-Dissolved		<0.000010)	mg/L		0.00001	22-NOV-19
Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	22-NOV-19
Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	22-NOV-19
Zirconium (Zr)-Dissolved		<0.00020		mg/L		0.0002	22-NOV-19
WG3224135-4 MS Aluminum (Al)-Dissolved	L2384727-2	102.8		%		70-130	22-NOV-19
Antimony (Sb)-Dissolved		100.5		%		70-130	22-NOV-19
Arsenic (As)-Dissolved		102.1		%		70-130	22-NOV-19
Barium (Ba)-Dissolved		N/A	MS-B	%		-	22-NOV-19
Beryllium (Be)-Dissolved		95.7		%		70-130	22-NOV-19
Bismuth (Bi)-Dissolved		95.9		%		70-130	22-NOV-19
Boron (B)-Dissolved		97.4		%		70-130	22-NOV-19
Cadmium (Cd)-Dissolved		99.9		%		70-130	22-NOV-19
Calcium (Ca)-Dissolved		N/A	MS-B	%		-	22-NOV-19
Cesium (Cs)-Dissolved		103.5		%		70-130	22-NOV-19
Chromium (Cr)-Dissolved		100.2		%		70-130	22-NOV-19
Cobalt (Co)-Dissolved		94.5		%		70-130	22-NOV-19
Copper (Cu)-Dissolved		92.4		%		70-130	22-NOV-19
Iron (Fe)-Dissolved		95.3		%		70-130	22-NOV-19
Lead (Pb)-Dissolved		96.4		%		70-130	22-NOV-19
Lithium (Li)-Dissolved		93.7		%		70-130	22-NOV-19
Magnesium (Mg)-Dissolved		N/A	MS-B	%		-	22-NOV-19
Manganese (Mn)-Dissolved		N/A	MS-B	%		-	22-NOV-19
Molybdenum (Mo)-Dissolved		105.7		%		70-130	22-NOV-19
Nickel (Ni)-Dissolved		92.9		%		70-130	22-NOV-19
Phosphorus (P)-Dissolved		97.5		%		70-130	22-NOV-19
Potassium (K)-Dissolved		N/A	MS-B	%		-	22-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4921688								
WG3224135-4 MS Rubidium (Rb)-Dissolve	ed	L2384727-2	101.1		%		70-130	22-NOV-19
Selenium (Se)-Dissolve			97.0		%		70-130	22-NOV-19
Silicon (Si)-Dissolved			96.8		%		70-130	22-NOV-19
Silver (Ag)-Dissolved			100.7		%		70-130	22-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	22-NOV-19
Strontium (Sr)-Dissolve	d		N/A	MS-B	%		-	22-NOV-19
Sulfur (S)-Dissolved			N/A	MS-B	%		-	22-NOV-19
Tellurium (Te)-Dissolve	d		102.7		%		70-130	22-NOV-19
Thallium (TI)-Dissolved			95.6		%		70-130	22-NOV-19
Thorium (Th)-Dissolved			101.9		%		70-130	22-NOV-19
Tin (Sn)-Dissolved			101.9		%		70-130	22-NOV-19
Titanium (Ti)-Dissolved			99.2		%		70-130	22-NOV-19
Tungsten (W)-Dissolved	d		100.1		%		70-130	22-NOV-19
Uranium (U)-Dissolved			104.2		%		70-130	22-NOV-19
Vanadium (V)-Dissolved	d		101.0		%		70-130	22-NOV-19
Zinc (Zn)-Dissolved			103.3		%		70-130	22-NOV-19
Zirconium (Zr)-Dissolve	d		103.0		%		70-130	22-NOV-19
MET-T-CCMS-VA	Water							
Batch R4919320								
WG3224227-3 DUP Aluminum (Al)-Total		L2381659-1 < 0.0060	<0.0060	RPD-NA	mg/L	N/A	20	21-NOV-19
Antimony (Sb)-Total		0.00150	0.00150	THE THAT	mg/L	2.5	20	21-NOV-19
Arsenic (As)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Barium (Ba)-Total		0.00985	0.00983	111 5 1111	mg/L	1.2	20	21-NOV-19
Beryllium (Be)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Bismuth (Bi)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Boron (B)-Total		0.144	0.151	THE THIN	mg/L	0.9	20	21-NOV-19
Cadmium (Cd)-Total		0.000550	0.000609		mg/L	2.2	20	21-NOV-19
Calcium (Ca)-Total		395	410		mg/L	1.4	20	21-NOV-19 21-NOV-19
Cesium (Cs)-Total		0.000178	0.000170		mg/L	3.1	20	21-NOV-19 21-NOV-19
Chromium (Cr)-Total		<0.000170	<0.000170	RPD-NA	mg/L	N/A	20	21-NOV-19 21-NOV-19
Cobalt (Co)-Total		0.0819	0.0853	INI D-INA	mg/L	0.7	20	21-NOV-19 21-NOV-19
Copper (Cu)-Total		<0.0019	<0.0010	RPD-NA	mg/L	0.7 N/A	20	
Coppor (Cu)-Total		\0.0010	\0.0010	KLD-INA	mg/L	IN/A	20	21-NOV-19



Workorder: L2385413 Report Date: 27-NOV-19 Page 8 of 15

Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4919320								
WG3224227-3 DUP Iron (Fe)-Total		L2381659-1 0.099	0.109		mg/L	2.1	20	21-NOV-19
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Lithium (Li)-Total		0.138	0.136	THE THAT	mg/L	3.9	20	21-NOV-19
Magnesium (Mg)-Total		173	189		mg/L	0.1	20	21-NOV-19
Manganese (Mn)-Total		0.492	0.512		mg/L	0.1	20	21-NOV-19
Molybdenum (Mo)-Total		0.00451	0.00457		mg/L	2.1	20	21-NOV-19
Nickel (Ni)-Total		0.347	0.368		mg/L	1.0	20	21-NOV-19
Phosphorus (P)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	21-NOV-19
Potassium (K)-Total		7.91	8.25		mg/L	0.5	20	21-NOV-19
Rubidium (Rb)-Total		0.0107	0.0117		mg/L	6.7	20	21-NOV-19
Selenium (Se)-Total		0.00165	0.00156		mg/L	5.3	20	21-NOV-19
Silicon (Si)-Total		3.01	3.03		mg/L	3.3	20	21-NOV-19
Silver (Ag)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	21-NOV-19
Sodium (Na)-Total		84.9	85.4		mg/L	1.2	20	21-NOV-19
Strontium (Sr)-Total		1.47	1.49		mg/L	0.4	20	21-NOV-19
Sulfur (S)-Total		493	492		mg/L	0.6	20	21-NOV-19
Tellurium (Te)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	21-NOV-19
Thallium (TI)-Total		0.000131	0.000122		mg/L	5.7	20	21-NOV-19
Thorium (Th)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Tin (Sn)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-NOV-19
Tungsten (W)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Uranium (U)-Total		0.0157	0.0156		mg/L	1.3	20	21-NOV-19
Vanadium (V)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
Zinc (Zn)-Total		0.0778	0.0821		mg/L	0.8	20	21-NOV-19
Zirconium (Zr)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224227-5 DUP		L2382288-2						
Aluminum (Al)-Total		<0.0060	0.0066	RPD-NA	mg/L	N/A	20	21-NOV-19
Antimony (Sb)-Total		0.00465	0.00476		mg/L	2.3	20	21-NOV-19
Arsenic (As)-Total		0.00043	0.00037		mg/L	15	20	21-NOV-19
Barium (Ba)-Total		0.00931	0.00896		mg/L	3.9	20	21-NOV-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Bismuth (Bi)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4919320								
WG3224227-5 DUP Boron (B)-Total		L2382288-2 <0.020	<0.020	RPD-NA	mg/L	N/A	20	21-NOV-19
Cadmium (Cd)-Total		<0.0013	0.00122		mg/L	2.4	20	21-NOV-19
Calcium (Ca)-Total		344	352		mg/L	2.3	20	21-NOV-19
Cesium (Cs)-Total		0.000395	0.000387		mg/L	2.2	20	21-NOV-19
Chromium (Cr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Cobalt (Co)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Copper (Cu)-Total		0.0082	0.0083		mg/L	1.4	20	21-NOV-19
Iron (Fe)-Total		<0.020	0.021	RPD-NA	mg/L	N/A	20	21-NOV-19
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-NOV-19
Lithium (Li)-Total		0.0041	0.0040		mg/L	2.4	20	21-NOV-19
Magnesium (Mg)-Total		14.3	14.2		mg/L	0.3	20	21-NOV-19
Manganese (Mn)-Total		0.0464	0.0468		mg/L	0.8	20	21-NOV-19
Molybdenum (Mo)-Total		5.11	5.24		mg/L	2.5	20	21-NOV-19
Nickel (Ni)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
Phosphorus (P)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	21-NOV-19
Potassium (K)-Total		7.97	7.95		mg/L	0.2	20	21-NOV-19
Rubidium (Rb)-Total		0.0126	0.0124		mg/L	1.1	20	21-NOV-19
Selenium (Se)-Total		0.00413	0.00392		mg/L	5.2	20	21-NOV-19
Silicon (Si)-Total		2.98	3.01		mg/L	1.2	20	21-NOV-19
Silver (Ag)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	21-NOV-19
Sodium (Na)-Total		137	138		mg/L	0.8	20	21-NOV-19
Strontium (Sr)-Total		3.26	3.29		mg/L	1.2	20	21-NOV-19
Sulfur (S)-Total		396	393		mg/L	0.8	20	21-NOV-19
Tellurium (Te)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	21-NOV-19
Thallium (TI)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	21-NOV-19
Thorium (Th)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Tin (Sn)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Titanium (Ti)-Total		<0.0048	0.00500		mg/L	8.9	20	21-NOV-19
Tungsten (W)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-NOV-19
Uranium (U)-Total		0.00926	0.00954		mg/L	3.0	20	21-NOV-19
Vanadium (V)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
Zinc (Zn)-Total		<0.0060	<0.0060	RPD-NA	mg/L	N/A	20	21-NOV-19
Zirconium (Zr)-Total		<0.00040	<0.00040		mg/L			21-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4919320								
WG3224227-5 DUP Zirconium (Zr)-Total		L2382288-2 <0.00040	<0.00040	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224227-2 LCS								
Aluminum (AI)-Total			103.7		%		80-120	21-NOV-19
Antimony (Sb)-Total			99.1		%		80-120	21-NOV-19
Arsenic (As)-Total			100.9		%		80-120	21-NOV-19
Barium (Ba)-Total			102.3		%		80-120	21-NOV-19
Beryllium (Be)-Total			103.6		%		80-120	21-NOV-19
Bismuth (Bi)-Total			100.3		%		80-120	21-NOV-19
Boron (B)-Total			103.1		%		80-120	21-NOV-19
Cadmium (Cd)-Total			99.7		%		80-120	21-NOV-19
Calcium (Ca)-Total			102.7		%		80-120	21-NOV-19
Cesium (Cs)-Total			94.0		%		80-120	21-NOV-19
Chromium (Cr)-Total			103.0		%		80-120	21-NOV-19
Cobalt (Co)-Total			101.4		%		80-120	21-NOV-19
Copper (Cu)-Total			99.8		%		80-120	21-NOV-19
Iron (Fe)-Total			101.2		%		80-120	21-NOV-19
Lead (Pb)-Total			102.4		%		80-120	21-NOV-19
Lithium (Li)-Total			100.1		%		80-120	21-NOV-19
Magnesium (Mg)-Total			104.9		%		80-120	21-NOV-19
Manganese (Mn)-Total			107.5		%		80-120	21-NOV-19
Molybdenum (Mo)-Total			102.9		%		80-120	21-NOV-19
Nickel (Ni)-Total			102.4		%		80-120	21-NOV-19
Phosphorus (P)-Total			112.6		%		80-120	21-NOV-19
Potassium (K)-Total			109.3		%		80-120	21-NOV-19
Rubidium (Rb)-Total			106.4		%		80-120	21-NOV-19
Selenium (Se)-Total			104.5		%		80-120	21-NOV-19
Silicon (Si)-Total			108.1		%		80-120	21-NOV-19
Silver (Ag)-Total			97.3		%		80-120	21-NOV-19
Sodium (Na)-Total			104.3		%		80-120	21-NOV-19
Strontium (Sr)-Total			99.1		%		80-120	21-NOV-19
Sulfur (S)-Total			99.98		%		80-120	21-NOV-19
Tellurium (Te)-Total			95.6		%		80-120	21-NOV-19
Thallium (TI)-Total			101.9		%		80-120	21-NOV-19
Thorium (Th)-Total			98.3		%		80-120	21-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4919320								
WG3224227-2 LCS			00.0		0/			
Tin (Sn)-Total			99.0		%		80-120	21-NOV-19
Titanium (Ti)-Total			95.2				80-120	21-NOV-19
Tungsten (W)-Total			103.8		%		80-120	21-NOV-19
Uranium (U)-Total			98.6		%		80-120	21-NOV-19
Vanadium (V)-Total			104.5		%		80-120	21-NOV-19
Zinc (Zn)-Total			98.9		%		80-120	21-NOV-19
Zirconium (Zr)-Total			100.1		%		80-120	21-NOV-19
WG3224227-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Bismuth (Bi)-Total			<0.000050	1	mg/L		0.00005	21-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	21-NOV-19
Cadmium (Cd)-Total			<0.000005	iC	mg/L		0.000005	21-NOV-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-NOV-19
Cesium (Cs)-Total			<0.000010	1	mg/L		0.00001	21-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	21-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	21-NOV-19
Lead (Pb)-Total			<0.000050	1	mg/L		0.00005	21-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	21-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Molybdenum (Mo)-Total			<0.000050	1	mg/L		0.00005	21-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-NOV-19
Phosphorus (P)-Total			<0.050		mg/L		0.05	21-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	21-NOV-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	21-NOV-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	21-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	21-NOV-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	21-NOV-19



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Client: GHD Limited

400 - 179 Colonnade Road

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							_
Batch R4919320								
WG3224227-1 MB								
Sodium (Na)-Total			<0.050		mg/L		0.05	21-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	21-NOV-19
Sulfur (S)-Total			<0.50		mg/L		0.5	21-NOV-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	21-NOV-19
Thallium (TI)-Total			<0.000010	1	mg/L		0.00001	21-NOV-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	21-NOV-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	21-NOV-19
Uranium (U)-Total			<0.000010	1	mg/L		0.00001	21-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	21-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-NOV-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	21-NOV-19
NH3-F-VA	Water							
Batch R4921471								
WG3225050-3 DUP Ammonia, Total (as N)		L2385413-1 0.0051	<0.0050	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3225050-2 LCS Ammonia, Total (as N)			100.0		%		85-115	21-NOV-19
WG3225050-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	21-NOV-19
WG3225050-4 MS		L2385413-2						
Ammonia, Total (as N)			100.1		%		75-125	21-NOV-19
NO2-L-IC-N-VA	Water							
Batch R4920286								
WG3224191-3 DUP Nitrite (as N)		L2385422-3 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-NOV-19
WG3224191-2 LCS Nitrite (as N)			99.8		%		90-110	21-NOV-19
WG3224191-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-19
NO3-L-IC-N-VA	Water							



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Client: GHD Limited

400 - 179 Colonnade Road

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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA		Water							_
-	20286								
WG3224191-2 Nitrate (as N)	LCS			103.5		%		90-110	21-NOV-19
WG3224191-1 Nitrate (as N)	MB			<0.0050		mg/L		0.005	21-NOV-19
PH-PCT-VA		Water							
Batch R49	20107								
WG3224214-2 pH	CRM		VA-PH7-BUF	7.03		рН		6.9-7.1	21-NOV-19
WG3224214-4 pH	DUP		L2385163-13 8.51	8.52	J	рН	0.01	0.3	21-NOV-19
SO4-IC-N-VA		Water							
Batch R49	20286								
WG3224191-3 Sulfate (SO4)	DUP		L2385422-3 494	493		mg/L	0.2	20	21-NOV-19
WG3224191-2 Sulfate (SO4)	LCS			101.9		%		90-110	21-NOV-19
WG3224191-1 Sulfate (SO4)	МВ			<0.30		mg/L		0.3	21-NOV-19
TDS-VA		Water							
Batch R49	19799								
WG3224062-6 Total Dissolved S	DUP Solids		L2384893-4 82	79		mg/L	3.7	20	20-NOV-19
WG3224062-5 Total Dissolved S	LCS Solids			99.2		%		85-115	20-NOV-19
WG3224062-4 Total Dissolved S	MB Solids			<10		mg/L		10	20-NOV-19

Workorder: L2385413 Report Date: 27-NOV-19

GHD Limited Client:

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

Legend:

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

Method Blank MB

Internal Reference Material IRM CRM Certified Reference Material CCV Continuing Calibration Verification CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

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

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Workorder: L2385413 Report Date: 27-NOV-19

Client: GHD Limited

#400 - 179 Colonnade Road

Ottawa ON K2E 7J4

Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	19-NOV-19 10:15	21-NOV-19 07:37	0.25	45	hours	EHTR-FM
	2	19-NOV-19 10:30	21-NOV-19 07:37	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2385413 were received on 20-NOV-19 09:15.

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 predetermined 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

L 2385413-COEC

COC Number: 17 -

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Canada Toll Free: 1 800 668 9878

www.alsglobal.com Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To Report Format / Distribution Contact and company name below will appear on the final report GHD Limited Select Report Format: 🗹 PDF 🕝 EXCEL - 🖸 EDD (DIGITAL) Regular [R] .

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GHD Limited

ATTN: Airesse MacPhee

455 Phillip Street

Waterloo ON N2L 3X2

Date Received: 30-SEP-19

Report Date: 08-OCT-19 15:07 (MT)

Version: FINAL

Client Phone: 604-248-3661

Certificate of Analysis

Lab Work Order #: L2356417Project P.O. #: 73515713-2
Job Reference: 056484-51

C of C Numbers:

Legal Site Desc: Phase 51 - Comox Valley SW

Selam Worku Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2356417 CONTD....

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356417-1 WS-56484-260919-NT-10 Sampled By: N. Turl on 26-SEP-19 @ 13:50 Matrix: SW							
Physical Tests							
Conductivity	319		2.0	uS/cm		01-OCT-19	R4851485
Hardness (as CaCO3)	146		0.50	mg/L		08-OCT-19	
Hardness (from Totals)	152		0.50	mg/L		03-OCT-19	
рН	7.79		0.10	рН		01-OCT-19	R4851485
Total Dissolved Solids	215		20	mg/L		03-OCT-19	R4858853
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	135		1.0	mg/L		01-OCT-19	R4851485
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-OCT-19	R4851485
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-OCT-19	R4851485
Alkalinity, Total (as CaCO3)	135		1.0	mg/L		01-OCT-19	R4851485
Ammonia, Total (as N)	0.0382		0.0050	mg/L		02-OCT-19	R4857533
Chloride (CI)	10.7		0.50	mg/L		01-OCT-19	R4857435
Fluoride (F)	<0.020		0.020	mg/L		01-OCT-19	R4857435
Nitrate and Nitrite (as N)	0.670		0.0051	mg/L		02-OCT-19	
Nitrate (as N)	0.665		0.0050	mg/L		01-OCT-19	R4857435
Nitrite (as N)	0.0048		0.0010	mg/L		01-OCT-19	R4857435
Sulfate (SO4)	29.9		0.30	mg/L		01-OCT-19	R4857435
Total Metals							
Aluminum (AI)-Total	0.0050		0.0030	mg/L		01-OCT-19	R4851419
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Arsenic (As)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Barium (Ba)-Total	0.00055		0.00010	mg/L		01-OCT-19	R4851419
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-OCT-19	R4851419
Boron (B)-Total	0.100		0.010	mg/L		01-OCT-19	R4851419
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		01-OCT-19	R4851419
Calcium (Ca)-Total	40.3		0.050	mg/L		01-OCT-19	R4851419
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		01-OCT-19	R4851419
Chromium (Cr)-Total	0.00016		0.00010	mg/L		01-OCT-19	R4851419
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Copper (Cu)-Total	<0.00050		0.00050	mg/L		01-OCT-19	R4851419
Iron (Fe)-Total	0.175		0.010	mg/L		01-OCT-19	R4851419
Lead (Pb)-Total	<0.000050		0.000050	mg/L		01-OCT-19	R4851419
Lithium (Li)-Total	<0.0010		0.0010	mg/L		01-OCT-19	R4851419
Magnesium (Mg)-Total	12.4		0.0050	mg/L		01-OCT-19	R4851419
Manganese (Mn)-Total	0.00605		0.00010	mg/L		01-OCT-19	R4851419
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		02-OCT-19	R4857168
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		01-OCT-19	R4851419
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		01-OCT-19	R4851419
Phosphorus (P)-Total	<0.050		0.050	mg/L		01-OCT-19	R4851419
Potassium (K)-Total	0.253		0.050	mg/L		01-OCT-19	R4851419

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

L2356417 CONTD....

PAGE 3 of 6 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356417-1 WS-56484-260919-NT-10 Sampled By: N. Turl on 26-SEP-19 @ 13:50 Matrix: SW							
Total Metals							
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L		01-OCT-19	R4851419
Selenium (Se)-Total	<0.000050		0.000050	mg/L		01-OCT-19	R4851419
Silicon (Si)-Total	9.77		0.10	mg/L		01-OCT-19	R4851419
Silver (Ag)-Total	<0.000010		0.000010	mg/L		01-OCT-19	R4851419
Sodium (Na)-Total	9.65		0.050	mg/L		01-OCT-19	R4851419
Strontium (Sr)-Total	0.0562		0.00020	mg/L		01-OCT-19	R4851419
Sulfur (S)-Total	10.9		0.50	mg/L		01-OCT-19	R4851419
Tellurium (Te)-Total	<0.00020		0.00020	mg/L		01-OCT-19	R4851419
Thallium (TI)-Total	<0.000010		0.000010	mg/L		01-OCT-19	R4851419
Thorium (Th)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Titanium (Ti)-Total	0.00032		0.00030	mg/L		01-OCT-19	R4851419
Tungsten (W)-Total	<0.00010		0.00010	mg/L		01-OCT-19	R4851419
Uranium (U)-Total	<0.00010		0.000010	mg/L		01-OCT-19	R4851419
Vanadium (V)-Total	0.00135		0.00050	mg/L		01-OCT-19	R4851419
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		01-OCT-19	R4851419
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L		01-OCT-19	R4851419
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-OCT-19	R4857494
Dissolved Metals Filtration Location	FIELD					03-OCT-19	R4857613
Aluminum (Al)-Dissolved	0.0012		0.0010	mg/L	01-OCT-19	01-OCT-19	R4853008
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	02-OCT-19	R4855328
Barium (Ba)-Dissolved	0.00056		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-OCT-19	01-OCT-19	R4853008
Boron (B)-Dissolved	0.092		0.010	mg/L	01-OCT-19	01-OCT-19	R4853008
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	01-OCT-19	01-OCT-19	R4853008
Calcium (Ca)-Dissolved	39.1		0.050	mg/L	01-OCT-19	01-OCT-19	R4853008
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	01-OCT-19	01-OCT-19	R4853008
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	01-OCT-19	02-OCT-19	R4855328
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	01-OCT-19	01-OCT-19	R4853008
Iron (Fe)-Dissolved	0.116		0.010	mg/L	01-OCT-19	01-OCT-19	R4853008
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	01-OCT-19	01-OCT-19	R4853008
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	01-OCT-19	01-OCT-19	R4853008
Magnesium (Mg)-Dissolved	11.8		0.0050	mg/L	01-OCT-19	01-OCT-19	R4853008
Manganese (Mn)-Dissolved	0.00531		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-OCT-19	03-OCT-19	R4857657
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	01-OCT-19	01-OCT-19	R4853008
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	01-OCT-19	01-OCT-19	R4853008

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

L2356417 CONTD.... PAGE 4 of 6

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356417-1 WS-56484-260919-NT-10 Sampled By: N. Turl on 26-SEP-19 @ 13:50 Matrix: SW							
Dissolved Metals							
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	01-OCT-19	01-OCT-19	R4853008
Potassium (K)-Dissolved	0.244		0.050	mg/L	01-OCT-19	01-OCT-19	R4853008
Rubidium (Rb)-Dissolved	0.00023		0.00020	mg/L	01-OCT-19	01-OCT-19	R4853008
Selenium (Se)-Dissolved	<0.00050		0.000050	mg/L	01-OCT-19	01-OCT-19	R4853008
Silicon (Si)-Dissolved	9.40		0.050	mg/L	01-OCT-19	01-OCT-19	R4853008
Silver (Ag)-Dissolved	<0.000020	DLM	0.000020	mg/L	03-OCT-19	03-OCT-19	R4858061
Sodium (Na)-Dissolved	9.40		0.050	mg/L	01-OCT-19	01-OCT-19	R4853008
Strontium (Sr)-Dissolved	0.0554		0.00020	mg/L	01-OCT-19	01-OCT-19	R4853008
Sulfur (S)-Dissolved	9.23		0.50	mg/L	01-OCT-19	01-OCT-19	R4853008
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	01-OCT-19	01-OCT-19	R4853008
Thallium (TI)-Dissolved	<0.000010		0.000010	mg/L	01-OCT-19	01-OCT-19	R4853008
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	01-OCT-19	01-OCT-19	R4853008
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	01-OCT-19	01-OCT-19	R4853008
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	01-OCT-19	01-OCT-19	R4853008
Vanadium (V)-Dissolved	0.00113		0.00050	mg/L	01-OCT-19	01-OCT-19	R4853008
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	01-OCT-19	01-OCT-19	R4853008
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	01-OCT-19	01-OCT-19	R4853008
* Refer to Referenced Information for Qualifiers (if any) and	Methodology				I	l	

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

L2356417 CONTD....

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2356417-1	
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2356417-1	
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2356417-1	
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2356417-1	
Matrix Spike	Barium (Ba)-Total	MS-B	L2356417-1	
Matrix Spike	Calcium (Ca)-Total	MS-B	L2356417-1	
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2356417-1	
Matrix Spike	Potassium (K)-Total	MS-B	L2356417-1	
Matrix Spike	Sodium (Na)-Total	MS-B	L2356417-1	
Matrix Spike	Strontium (Sr)-Total	MS-B	L2356417-1	
Matrix Spike	Nitrate (as N)	MS-B	L2356417-1	

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**	

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

APHA 2320 Alkalinity

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water EPA 300.0

Nitrate and Nitrite (as N) is a calculated (Carbin Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Alkalinity Species by Titration

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

ALK-TITR-VA

EC-SCREEN-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity wher not during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA 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-VA Water Hardness APHA 2340B

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-D-CVAA-VA Water Diss. Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), pres6Wet with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

Water

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS EPA 1631E (mod)
Water samples undergo a cold-oxidationous the content of t

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), pleeled with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC EPA 200.2/6020A (mod)

Water samples are digested with nitric and PM rochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

L2356417 CONTD....

Reference Information

PAGE 6 of 6 Version: FINAL

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

0.000.000

It is recommended that this analysis be conducted in the field.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by APHA 2540 C - GRAVIMETRIC

This analysis is carried out using proceding indexpiced 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.

VIC100-T-HARDNESS-VA Water Hardness from Total Metals APHA 2340B

Custom Calculation for Hardness. Client is requesting when Total Metals are run, only Total metals are used for hardness calculation.

** 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

 VA
 ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, 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.



Workorder: L2356417

Report Date: 08-OCT-19

Page 1 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA Batch R485148 WG3177659-4 DUP	Water 5	L2356417-1						
Alkalinity, Total (as Ca	CO3)	135	133		mg/L	1.6	20	01-OCT-19
WG3177659-3 LCS Alkalinity, Total (as Ca	CO3)		101.6		%		85-115	01-OCT-19
WG3177659-1 MB Alkalinity, Total (as Ca	CO3)		<1.0		mg/L		1	01-OCT-19
CL-IC-N-VA	Water							
Batch R485743	5							
WG3177647-3 DUP Chloride (CI)		L2356417-1 10.7	10.7		mg/L	0.1	20	01-OCT-19
WG3177647-2 LCS Chloride (CI)			100.2		%		90-110	01-OCT-19
WG3177647-1 MB Chloride (CI)			<0.50		mg/L		0.5	01-OCT-19
WG3177647-4 MS Chloride (CI)		L2356455-1	97.1		%		75-125	01-OCT-19
EC-PCT-VA	Water							
Batch R485148	5							
WG3177659-4 DUP Conductivity		L2356417-1 319	321		uS/cm	0.6	10	01-OCT-19
WG3177659-3 LCS Conductivity			98.8		%		90-110	01-OCT-19
WG3177659-1 MB Conductivity			<2.0		uS/cm		2	01-OCT-19
F-IC-N-VA	Water							
Batch R485743	5							
WG3177647-3 DUP Fluoride (F)		L2356417-1 < 0.020	<0.020	RPD-NA	mg/L	N/A	20	01-OCT-19
WG3177647-2 LCS Fluoride (F)			100.7		%		90-110	01-OCT-19
WG3177647-1 MB Fluoride (F)			<0.020		mg/L		0.02	01-OCT-19
WG3177647-4 MS Fluoride (F)		L2356455-1	102.5		%		75-125	01-OCT-19
HG-D-CVAA-VA	Water							



Qualifier

Workorder: L2356417 Report Date: 08-OCT-19 Page 2 of 19

RPD

Limit

Analyzed

Units

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Matrix

Reference

Result

Contact: Airesse MacPhee

Test

HG-D-CVAA-VA	Water							
Batch R4857657		1 2255724 2						
WG3179972-7 DUP Mercury (Hg)-Dissolved		L2355724-2 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-OCT-19
WG3179972-6 LCS								
Mercury (Hg)-Dissolved			101.5		%		80-120	03-OCT-19
WG3179972-5 MB			0.0000055		4		0.00005	
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-OCT-19
WG3179972-8 MS Mercury (Hg)-Dissolved		L2355724-1	94.9		%		70-130	03-OCT-19
HG-T-CVAA-VA	Water							
Batch R4857168								
WG3179900-3 DUP		L2355483-5						
Mercury (Hg)-Total		<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179900-5 DUP Mercury (Hg)-Total		L2355953-7 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	02 OCT 10
		<0.0000030	<0.000003C	RPD-NA	mg/L	IN/A	20	02-OCT-19
WG3179900-2 LCS Mercury (Hg)-Total			102.0		%		80-120	02-OCT-19
WG3179900-1 MB								
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	02-OCT-19
WG3179900-4 MS Mercury (Hg)-Total		L2354716-3	104.8		%		70-130	02-OCT-19
WG3179900-6 MS		L2356808-5						
Mercury (Hg)-Total			109.9		%		70-130	02-OCT-19
MET-D-CCMS-VA	Water							
Batch R4853008								
WG3177680-3 DUP		L2355893-1	0.0407		a./I			
Aluminum (Al)-Dissolved Antimony (Sb)-Dissolved		0.0200 0.00023	0.0197 0.00023		mg/L mg/L	1.6	20	01-OCT-19
Barium (Ba)-Dissolved					_	4.1	20	01-OCT-19
Beryllium (Be)-Dissolved		0.00941 <0.00010	0.00937 <0.00010	DDD MA	mg/L	0.4	20	01-OCT-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA RPD-NA	mg/L mg/L	N/A N/A	20 20	01-OCT-19 01-OCT-19
Boron (B)-Dissolved		0.905	0.944	KPD-NA	mg/L			
Calcium (Ca)-Dissolved		2.65	2.65		mg/L	4.2 0.2	20 20	01-OCT-19 01-OCT-19
Cesium (Cs)-Dissolved		0.000021	0.000022		mg/L	5.7	20	01-OCT-19 01-OCT-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010		mg/L	5.7 N/A		
Copper (Cu)-Dissolved		0.00020	<0.00010	RPD-NA RPD-NA	mg/L	N/A N/A	20	01-OCT-19 01-OCT-19
Iron (Fe)-Dissolved		0.00020	0.020	KFD-NA	mg/L		20	
iioii (i e)-Dissoived		0.020	0.020		mg/L	0.5	20	01-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 3 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Metro-Comis-VA Water Batch R485308 WG317780-93 DUP Leaf (Ph)-Dissolved 0.000050 0.000050 RPD-NA mg/L 0.0 20 01-0CT-19 0.0	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Lead (Pb)-Dissolved	MET-D-CCMS-VA	Water							
Lead (Pb)-Dissolved	Batch R485	3008							
Lithium (Li)-Dissolved		-		0.000050					
Magnesium (Mg)-Dissolved 0.594 0.614 mg/L 3.4 20 01-OCT-19 Manganese (Mn)-Dissolved 0.00196 0.00202 mg/L 2.9 20 01-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00188 mg/L 1.2 20 01-OCT-19 Nickel (Ni)-Dissolved <0.0050					RPD-NA	•			
Marganese (Mn)-Dissolved 0.00196 0.00202 mg/L 2.9 20 01-OCT-19 Molybdenum (Mo)-Dissolved 0.00185 0.00188 mg/L 1.2 20 01-OCT-19 Nickel (Ni)-Dissolved <0.00050						•			
Molybdenum (Mo)-Dissolved 0.00185 0.00188 mg/L 1.2 20 01-OCT-19 Nickel (Ni)-Dissolved <0.00050						•			
Nickel (Ni)-Dissolved	• ,					•			
Phosphorus (P)-Dissolved			0.00185	0.00188		•	1.2	20	01-OCT-19
Potassium (K)-Dissolved 0.744 0.752 mg/L 1.1 20 01-OCT-19 Rubidium (Rb)-Dissolved 0.00070 0.00067 mg/L 4.2 20 01-OCT-19 Silicon (Si)-Dissolved 5.24 5.19 mg/L 0.9 20 01-OCT-19 Sodium (Na)-Dissolved 117 119 mg/L 1.8 20 01-OCT-19 Strontium (Sr)-Dissolved 0.324 0.318 mg/L 1.9 20 01-OCT-19 Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellurium (Te)-Dissolved <0.00020	Nickel (Ni)-Dissolv	red	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-OCT-19
Rubidium (Rb)-Dissolved 0.00070 0.00067 mg/L 4.2 20 01-OCT-19 Silicon (Si)-Dissolved 5.24 5.19 mg/L 0.9 20 01-OCT-19 Sodium (Na)-Dissolved 117 119 mg/L 1.8 20 01-OCT-19 Strontium (Sr)-Dissolved 0.324 0.318 mg/L 1.9 20 01-OCT-19 Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellurium (Te)-Dissolved <0.00020	Phosphorus (P)-Di	issolved	<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-OCT-19
Silicon (Si)-Dissolved 5.24 5.19 mg/L 0.9 20 01-OCT-19 Sodium (Na)-Dissolved 117 119 mg/L 1.8 20 01-OCT-19 Strontium (Sr)-Dissolved 0.324 0.318 mg/L 1.9 20 01-OCT-19 Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellutrium (Te)-Dissolved <0.00020	Potassium (K)-Dis	solved	0.744	0.752		mg/L	1.1	20	01-OCT-19
Sodium (Na)-Dissolved 117 119 mg/L 1.8 20 01-OCT-19 Strontium (Sr)-Dissolved 0.324 0.318 mg/L 1.9 20 01-OCT-19 Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellurium (Te)-Dissolved <0.00020	Rubidium (Rb)-Dis	ssolved	0.00070	0.00067		mg/L	4.2	20	01-OCT-19
Strontium (Sr)-Dissolved 0.324 0.318 mg/L 1.9 20 01-OCT-19 Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellurium (Te)-Dissolved <0.00020	Silicon (Si)-Dissolv	/ed	5.24	5.19		mg/L	0.9	20	01-OCT-19
Sulfur (S)-Dissolved 18.5 18.3 mg/L 0.9 20 01-OCT-19 Tellurium (Te)-Dissolved <0.00020	Sodium (Na)-Disso	olved	117	119		mg/L	1.8	20	01-OCT-19
Tellurium (Te)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 01-OCT-19 Thallium (TI)-Dissolved <0.000010	Strontium (Sr)-Dis	solved	0.324	0.318		mg/L	1.9	20	01-OCT-19
Thallium (TI)-Dissolved	Sulfur (S)-Dissolve	ed	18.5	18.3		mg/L	0.9	20	01-OCT-19
Thorium (Th)-Dissolved	Tellurium (Te)-Dis	solved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-OCT-19
Tin (Sn)-Dissolved 0.00016 0.00016 mg/L 3.7 20 01-OCT-19 Titanium (Ti)-Dissolved 0.00054 0.00055 mg/L 1.1 20 01-OCT-19 Tungsten (W)-Dissolved 0.00140 0.00136 mg/L 3.0 20 01-OCT-19 Uranium (U)-Dissolved 0.000233 0.000227 mg/L 2.6 20 01-OCT-19 Vanadium (V)-Dissolved <0.00050	Thallium (TI)-Disso	olved	<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-OCT-19
Titanium (Ti)-Dissolved 0.00054 0.00055 mg/L 1.1 20 01-OCT-19 Tungsten (W)-Dissolved 0.00140 0.00136 mg/L 3.0 20 01-OCT-19 Uranium (U)-Dissolved 0.000233 0.000227 mg/L 2.6 20 01-OCT-19 Vanadium (V)-Dissolved <0.00050	Thorium (Th)-Diss	olved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-19
Tungsten (W)-Dissolved 0.00140 0.00136 mg/L 3.0 20 01-OCT-19 Uranium (U)-Dissolved 0.000233 0.000227 mg/L 2.6 20 01-OCT-19 Vanadium (V)-Dissolved <0.00050 <0.00050 RPD-NA mg/L N/A 20 01-OCT-19 Zinc (Zn)-Dissolved 0.0071 0.0073 mg/L 3.9 20 01-OCT-19 Zirconium (Zr)-Dissolved <0.00020 <0.00020 RPD-NA mg/L N/A 20 01-OCT-19 WG3177680-2 LCS Aluminum (Al)-Dissolved 91.4 % 80-120 01-OCT-19 Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 95.8 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Tin (Sn)-Dissolved	I	0.00016	0.00016		mg/L	3.7	20	01-OCT-19
Uranium (U)-Dissolved 0.000233 0.000227 mg/L 2.6 20 01-OCT-19 Vanadium (V)-Dissolved <0.00050	Titanium (Ti)-Disso	olved	0.00054	0.00055		mg/L	1.1	20	01-OCT-19
Vanadium (V)-Dissolved <0.00050 <0.00050 RPD-NA mg/L N/A 20 01-OCT-19 Zinc (Zn)-Dissolved 0.0071 0.0073 mg/L 3.9 20 01-OCT-19 Zirconium (Zr)-Dissolved <0.00020	Tungsten (W)-Diss	solved	0.00140	0.00136		mg/L	3.0	20	01-OCT-19
Zinc (Zn)-Dissolved 0.0071 0.0073 mg/L 3.9 20 01-OCT-19 Zirconium (Zr)-Dissolved <0.00020 RPD-NA mg/L N/A 20 01-OCT-19 WG3177680-2 LCS Aluminum (Al)-Dissolved 91.4 % 80-120 01-OCT-19 Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 90.4 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 92.3 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Uranium (U)-Disso	olved	0.000233	0.000227		mg/L	2.6	20	01-OCT-19
Zirconium (Zr)-Dissolved <0.00020 RPD-NA mg/L N/A 20 01-OCT-19 WG3177680-2 LCS Aluminum (Al)-Dissolved 91.4 % 80-120 01-OCT-19 Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Vanadium (V)-Diss	solved	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-OCT-19
WG3177680-2 LCS Aluminum (Al)-Dissolved 91.4 % 80-120 01-OCT-19 Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Zinc (Zn)-Dissolve	d	0.0071	0.0073		mg/L	3.9	20	01-OCT-19
Aluminum (Al)-Dissolved 91.4 % 80-120 01-OCT-19 Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Zirconium (Zr)-Dis	solved	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-OCT-19
Antimony (Sb)-Dissolved 95.0 % 80-120 01-OCT-19 Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	WG3177680-2 L	.cs							
Arsenic (As)-Dissolved 90.4 % 80-120 01-OCT-19 Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Aluminum (Al)-Dis	solved		91.4		%		80-120	01-OCT-19
Barium (Ba)-Dissolved 105.0 % 80-120 01-OCT-19 Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Antimony (Sb)-Dis	solved		95.0		%		80-120	01-OCT-19
Beryllium (Be)-Dissolved 93.2 % 80-120 01-OCT-19 Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Arsenic (As)-Disso	olved		90.4		%		80-120	01-OCT-19
Bismuth (Bi)-Dissolved 95.8 % 80-120 01-OCT-19 Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Barium (Ba)-Disso	lved		105.0		%		80-120	01-OCT-19
Boron (B)-Dissolved 100.2 % 80-120 01-OCT-19 Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Beryllium (Be)-Dis	solved		93.2		%		80-120	01-OCT-19
Cadmium (Cd)-Dissolved 92.3 % 80-120 01-OCT-19	Bismuth (Bi)-Disso	olved		95.8		%		80-120	01-OCT-19
, ,	Boron (B)-Dissolve	ed		100.2		%		80-120	01-OCT-19
Calcium (Ca)-Dissolved 93.5 % 80-120 01-OCT-19	Cadmium (Cd)-Dis	ssolved		92.3		%		80-120	01-OCT-19
	Calcium (Ca)-Diss	olved		93.5		%		80-120	01-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 4 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4853008							
WG3177680-2 LCS		07.0		0/			
Cesium (Cs)-Dissolved		97.3		%		80-120	01-OCT-19
Chromium (Cr)-Dissolved		92.4		%		80-120	01-OCT-19
Cobalt (Co)-Dissolved		93.5		%		80-120	01-OCT-19
Copper (Cu)-Dissolved		90.1		%		80-120	01-OCT-19
Iron (Fe)-Dissolved		87.0		%		80-120	01-OCT-19
Lead (Pb)-Dissolved		100.4		%		80-120	01-OCT-19
Lithium (Li)-Dissolved		93.7		%		80-120	01-OCT-19
Magnesium (Mg)-Dissolved		90.3		%		80-120	01-OCT-19
Manganese (Mn)-Dissolved		92.6		%		80-120	01-OCT-19
Molybdenum (Mo)-Dissolved		96.3		%		80-120	01-OCT-19
Nickel (Ni)-Dissolved		91.7		%		80-120	01-OCT-19
Phosphorus (P)-Dissolved		102.7		%		70-130	01-OCT-19
Potassium (K)-Dissolved		96.6		%		80-120	01-OCT-19
Rubidium (Rb)-Dissolved		91.5		%		80-120	01-OCT-19
Selenium (Se)-Dissolved		96.2		%		80-120	01-OCT-19
Silicon (Si)-Dissolved		91.2		%		60-140	01-OCT-19
Sodium (Na)-Dissolved		93.1		%		80-120	01-OCT-19
Strontium (Sr)-Dissolved		96.6		%		80-120	01-OCT-19
Sulfur (S)-Dissolved		90.8		%		80-120	01-OCT-19
Tellurium (Te)-Dissolved		90.8		%		80-120	01-OCT-19
Thallium (TI)-Dissolved		99.3		%		80-120	01-OCT-19
Thorium (Th)-Dissolved		90.9		%		80-120	01-OCT-19
Tin (Sn)-Dissolved		93.6		%		80-120	01-OCT-19
Titanium (Ti)-Dissolved		90.8		%		80-120	01-OCT-19
Tungsten (W)-Dissolved		100.4		%		80-120	01-OCT-19
Uranium (U)-Dissolved		98.5		%		80-120	01-OCT-19
Vanadium (V)-Dissolved		93.7		%		80-120	01-OCT-19
Zinc (Zn)-Dissolved		92.0		%		80-120	01-OCT-19
Zirconium (Zr)-Dissolved		90.6		%		80-120	01-OCT-19
WG3177680-1 MB Aluminum (Al)-Dissolved		<0.0010		mg/L		0.001	01-OCT-19
Antimony (Sb)-Dissolved		<0.00010)	mg/L		0.0001	01-OCT-19
Barium (Ba)-Dissolved		<0.00010		mg/L		0.0001	01-OCT-19
Beryllium (Be)-Dissolved		<0.00010		mg/L		0.0001	01-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 5 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4853	8008							
WG3177680-1 M Bismuth (Bi)-Dissol			<0.000050	1	mg/L		0.00005	01-OCT-19
Boron (B)-Dissolve			<0.010	,	mg/L		0.01	01-OCT-19
Cadmium (Cd)-Diss			<0.00000	50	mg/L		0.000005	01-OCT-19
Calcium (Ca)-Disso			<0.050		mg/L		0.05	01-OCT-19
Cesium (Cs)-Dissol			<0.000010)	mg/L		0.00001	01-OCT-19
Cobalt (Co)-Dissolv			<0.00010	,	mg/L		0.0001	01-OCT-19
Copper (Cu)-Dissol			<0.00020		mg/L		0.0002	01-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-OCT-19
Lead (Pb)-Dissolve			<0.000050)	mg/L		0.00005	01-OCT-19
Lithium (Li)-Dissolv			<0.0010		mg/L		0.001	01-OCT-19
Magnesium (Mg)-D			<0.0050		mg/L		0.005	01-OCT-19
Manganese (Mn)-D			<0.00010		mg/L		0.0001	01-OCT-19
Molybdenum (Mo)-l			<0.000050)	mg/L		0.00005	01-OCT-19
Nickel (Ni)-Dissolve			<0.00050		mg/L		0.0005	01-OCT-19
Phosphorus (P)-Dis	ssolved		<0.050		mg/L		0.05	01-OCT-19
Potassium (K)-Diss	solved		<0.050		mg/L		0.05	01-OCT-19
Rubidium (Rb)-Diss	solved		<0.00020		mg/L		0.0002	01-OCT-19
Selenium (Se)-Diss	solved		<0.000050)	mg/L		0.00005	01-OCT-19
Silicon (Si)-Dissolve	ed		< 0.050		mg/L		0.05	01-OCT-19
Sodium (Na)-Disso	lved		< 0.050		mg/L		0.05	01-OCT-19
Strontium (Sr)-Diss	olved		<0.00020		mg/L		0.0002	01-OCT-19
Sulfur (S)-Dissolved	d		<0.50		mg/L		0.5	01-OCT-19
Tellurium (Te)-Diss	solved		<0.00020		mg/L		0.0002	01-OCT-19
Thallium (TI)-Disso	lved		<0.000010)	mg/L		0.00001	01-OCT-19
Thorium (Th)-Disso	olved		<0.00010		mg/L		0.0001	01-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-19
Titanium (Ti)-Disso	lved		<0.00030		mg/L		0.0003	01-OCT-19
Tungsten (W)-Disse	olved		<0.00010		mg/L		0.0001	01-OCT-19
Uranium (U)-Dissol	ved		<0.000010)	mg/L		0.00001	01-OCT-19
Vanadium (V)-Disse	olved		<0.00050		mg/L		0.0005	01-OCT-19
Zinc (Zn)-Dissolved	i		<0.0010		mg/L		0.001	01-OCT-19
Zirconium (Zr)-Diss	solved		<0.00020		mg/L		0.0002	01-OCT-19
WG3177680-4 M Aluminum (Al)-Diss		L2356417-1	95.1		%		70-130	01-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 6 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R48530	008							
WG3177680-4 MS		L2356417-1						
Antimony (Sb)-Disso			90.7		%		70-130	01-OCT-19
Arsenic (As)-Dissolv			94.1		%		70-130	01-OCT-19
Barium (Ba)-Dissolv			99.1		%		70-130	01-OCT-19
Beryllium (Be)-Disso			98.1		%		70-130	01-OCT-19
Bismuth (Bi)-Dissolv			93.5		%		70-130	01-OCT-19
Boron (B)-Dissolved			91.8		%		70-130	01-OCT-19
Cadmium (Cd)-Diss	olved		95.6		%		70-130	01-OCT-19
Calcium (Ca)-Dissol	ved		N/A	MS-B	%		-	01-OCT-19
Cesium (Cs)-Dissolv	ved		98.9		%		70-130	01-OCT-19
Chromium (Cr)-Diss	olved		96.8		%		70-130	01-OCT-19
Cobalt (Co)-Dissolve	ed		93.4		%		70-130	01-OCT-19
Copper (Cu)-Dissolv	red		89.3		%		70-130	01-OCT-19
Iron (Fe)-Dissolved			91.0		%		70-130	01-OCT-19
Lead (Pb)-Dissolved			98.1		%		70-130	01-OCT-19
Lithium (Li)-Dissolve	ed		103.3		%		70-130	01-OCT-19
Magnesium (Mg)-Di	ssolved		N/A	MS-B	%		-	01-OCT-19
Manganese (Mn)-Di	ssolved		88.8		%		70-130	01-OCT-19
Molybdenum (Mo)-D	issolved		90.3		%		70-130	01-OCT-19
Nickel (Ni)-Dissolved	d		90.1		%		70-130	01-OCT-19
Phosphorus (P)-Diss	solved		99.96		%		70-130	01-OCT-19
Potassium (K)-Disso	olved		96.7		%		70-130	01-OCT-19
Rubidium (Rb)-Disso	olved		93.9		%		70-130	01-OCT-19
Selenium (Se)-Disso	olved		100.6		%		70-130	01-OCT-19
Silicon (Si)-Dissolve	d		77.8		%		70-130	01-OCT-19
Sodium (Na)-Dissolv	/ed		N/A	MS-B	%		-	01-OCT-19
Strontium (Sr)-Disso	lved		N/A	MS-B	%		-	01-OCT-19
Sulfur (S)-Dissolved			91.7		%		70-130	01-OCT-19
Tellurium (Te)-Disso	lved		91.5		%		70-130	01-OCT-19
Thallium (TI)-Dissolv	ved .		99.2		%		70-130	01-OCT-19
Thorium (Th)-Dissol	ved		96.3		%		70-130	01-OCT-19
Tin (Sn)-Dissolved			87.9		%		70-130	01-OCT-19
Titanium (Ti)-Dissolv	/ed		83.8		%		70-130	01-OCT-19
Tungsten (W)-Disso	lved		93.7		%		70-130	01-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 7 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4853008								
WG3177680-4 MS		L2356417-1	00.7		0/			
Uranium (U)-Dissolved	ı		99.7		%		70-130	01-OCT-19
Vanadium (V)-Dissolved	1		94.6		%		70-130	01-OCT-19
Zinc (Zn)-Dissolved	_1		93.9		%		70-130	01-OCT-19
Zirconium (Zr)-Dissolve	a		89.4		%		70-130	01-OCT-19
Batch R4855328								
WG3177680-1 MB Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-OCT-19
Chromium (Cr)-Dissolve	ed		<0.00010		mg/L		0.0001	02-OCT-19
					3			02 001 10
Batch R4858061 WG3180298-3 DUP		L2356622-2						
Aluminum (Al)-Dissolve	d	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Antimony (Sb)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Beryllium (Be)-Dissolve	d	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-OCT-19
Cadmium (Cd)-Dissolve	ed	<0.0000050	<0.000005	RPD-NA	mg/L	N/A	20	03-OCT-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-OCT-19
Chromium (Cr)-Dissolve	ed	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Copper (Cu)-Dissolved		0.00072	0.00073		mg/L	1.2	20	03-OCT-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-OCT-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Magnesium (Mg)-Dissol	ved	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-19
Manganese (Mn)-Dissol	ved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Molybdenum (Mo)-Disso	olved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Phosphorus (P)-Dissolv	ed	<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Potassium (K)-Dissolve	d	<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Rubidium (Rb)-Dissolve	d	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 8 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4858061								
WG3180298-3 DUP Selenium (Se)-Dissolve	d	L2356622-2 < 0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Silicon (Si)-Dissolved	u .	<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Silver (Ag)-Dissolved		<0.00010	<0.00010		mg/L	N/A	20	03-OCT-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	
Sulfur (S)-Dissolved	u	<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-OCT-19 03-OCT-19
Tellurium (Te)-Dissolve	d	<0.00020	<0.00020		mg/L			
Thallium (TI)-Dissolved	u	<0.00020	<0.00020	RPD-NA		N/A	20	03-OCT-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	=	mg/L	N/A	20	03-OCT-19
Tin (Sn)-Dissolved		<0.00010		RPD-NA	mg/L	N/A	20	03-OCT-19
Titanium (Ti)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Tungsten (W)-Dissolved			<0.00030	RPD-NA	mg/L	N/A	20	03-OCT-19
Uranium (U)-Dissolved	u	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
()	4	<0.000010	<0.000010	=	mg/L	N/A	20	03-OCT-19
Vanadium (V)-Dissolved	J	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Zinc (Zn)-Dissolved	ـا	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Zirconium (Zr)-Dissolve	a	<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-OCT-19
WG3180298-2 LCS Aluminum (Al)-Dissolve	d		93.2		%		80-120	03-OCT-19
Antimony (Sb)-Dissolve	d		97.7		%		80-120	03-OCT-19
Arsenic (As)-Dissolved			99.0		%		80-120	03-OCT-19
Barium (Ba)-Dissolved			102.7		%		80-120	03-OCT-19
Beryllium (Be)-Dissolve	d		97.1		%		80-120	03-OCT-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	03-OCT-19
Boron (B)-Dissolved			98.7		%		80-120	03-OCT-19
Cadmium (Cd)-Dissolve	ed		99.3		%		80-120	03-OCT-19
Calcium (Ca)-Dissolved			102.0		%		80-120	03-OCT-19
Cesium (Cs)-Dissolved			96.7		%		80-120	03-OCT-19
Chromium (Cr)-Dissolve	ed		99.8		%		80-120	03-OCT-19
Cobalt (Co)-Dissolved			96.7		%		80-120	03-OCT-19
Copper (Cu)-Dissolved			94.4		%		80-120	03-OCT-19
Iron (Fe)-Dissolved			104.5		%		80-120	03-OCT-19
Lead (Pb)-Dissolved			100.5		%		80-120	03-OCT-19
Lithium (Li)-Dissolved			97.5		%		80-120	03-OCT-19



Workorder: L2356417 Report Date: 08-OCT-19 Page 9 of 19

Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA Water							
Batch R4858061							
WG3180298-2 LCS		00.4		0/			
Magnesium (Mg)-Dissolved		96.1		%		80-120	03-OCT-19
Manganese (Mn)-Dissolved		93.8		%		80-120	03-OCT-19
Molybdenum (Mo)-Dissolved		102.1		%		80-120	03-OCT-19
Nickel (Ni)-Dissolved Phosphorus (P)-Dissolved		97.1		%		80-120	03-OCT-19
1 ()		109.3		%		70-130	03-OCT-19
Potassium (K)-Dissolved		97.8		%		80-120	03-OCT-19
Rubidium (Rb)-Dissolved		99.3		%		80-120	03-OCT-19
Selenium (Se)-Dissolved		100.1		%		80-120	03-OCT-19
Silicon (Si)-Dissolved		104.7		%		60-140	03-OCT-19
Silver (Ag)-Dissolved		98.7		%		80-120	03-OCT-19
Sodium (Na)-Dissolved		95.0		%		80-120	03-OCT-19
Strontium (Sr)-Dissolved		96.5		%		80-120	03-OCT-19
Sulfur (S)-Dissolved		88.3		%		80-120	03-OCT-19
Tellurium (Te)-Dissolved		103.2		%		80-120	03-OCT-19
Thallium (TI)-Dissolved		93.2		%		80-120	03-OCT-19
Thorium (Th)-Dissolved		92.1		%		80-120	03-OCT-19
Tin (Sn)-Dissolved		97.4		%		80-120	03-OCT-19
Titanium (Ti)-Dissolved		93.2		%		80-120	03-OCT-19
Tungsten (W)-Dissolved		103.0		%		80-120	03-OCT-19
Uranium (U)-Dissolved		100.1		%		80-120	03-OCT-19
Vanadium (V)-Dissolved		97.1		%		80-120	03-OCT-19
Zinc (Zn)-Dissolved		104.3		%		80-120	03-OCT-19
Zirconium (Zr)-Dissolved		94.9		%		80-120	03-OCT-19
WG3180298-1 MB		0.0040				0.004	
Antimorn (Al)-Dissolved		<0.0010		mg/L		0.001	03-OCT-19
Antimony (Sb)-Dissolved		<0.00010		mg/L		0.0001	03-OCT-19
Arsenic (As)-Dissolved		<0.00010		mg/L		0.0001	03-OCT-19
Barium (Ba)-Dissolved		<0.00010		mg/L		0.0001	03-OCT-19
Beryllium (Be)-Dissolved		<0.00010	_	mg/L		0.0001	03-OCT-19
Bismuth (Bi)-Dissolved		<0.000050)	mg/L		0.00005	03-OCT-19
Boron (B)-Dissolved		<0.010		mg/L		0.01	03-OCT-19
Cadmium (Cd)-Dissolved		<0.000005	5C	mg/L		0.000005	03-OCT-19
Calcium (Ca)-Dissolved		<0.050		mg/L		0.05	03-OCT-19
Cesium (Cs)-Dissolved		<0.000010)	mg/L		0.00001	03-OCT-19



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Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	Water							
Batch R4858061 WG3180298-1 MB			0.00040				0.0004	
Chromium (Cr)-Dissolv	ed		<0.00010		mg/L		0.0001	03-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-OCT-19
Iron (Fe)-Dissolved			<0.010	_	mg/L		0.01	03-OCT-19
Lead (Pb)-Dissolved			<0.000050)	mg/L		0.00005	03-OCT-19
Lithium (Li)-Dissolved	l d		<0.0010		mg/L		0.001	03-OCT-19
Magnesium (Mg)-Disso			<0.0050		mg/L		0.005	03-OCT-19
Manganese (Mn)-Disso			<0.00010	_	mg/L		0.0001	03-OCT-19
Molybdenum (Mo)-Diss	solved		<0.000050)	mg/L		0.00005	03-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-OCT-19
Phosphorus (P)-Dissol			<0.050		mg/L		0.05	03-OCT-19
Potassium (K)-Dissolve			<0.050		mg/L		0.05	03-OCT-19
Rubidium (Rb)-Dissolv			<0.00020		mg/L		0.0002	03-OCT-19
Selenium (Se)-Dissolve	ed		<0.000050)	mg/L		0.00005	03-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-OCT-19
Silver (Ag)-Dissolved			<0.000010)	mg/L		0.00001	03-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-OCT-19
Strontium (Sr)-Dissolve	ed		<0.00020		mg/L		0.0002	03-OCT-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-OCT-19
Tellurium (Te)-Dissolve	ed		<0.00020		mg/L		0.0002	03-OCT-19
Thallium (TI)-Dissolved	I		<0.000010)	mg/L		0.00001	03-OCT-19
Thorium (Th)-Dissolved	d		<0.00010		mg/L		0.0001	03-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-OCT-19
Titanium (Ti)-Dissolved	I		<0.00030		mg/L		0.0003	03-OCT-19
Tungsten (W)-Dissolve	ed		<0.00010		mg/L		0.0001	03-OCT-19
Uranium (U)-Dissolved			<0.000010)	mg/L		0.00001	03-OCT-19
Vanadium (V)-Dissolve	ed		<0.00050		mg/L		0.0005	03-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-OCT-19
Zirconium (Zr)-Dissolve	ed		<0.00020		mg/L		0.0002	03-OCT-19
MET-T-CCMS-VA	Water							
Batch R4851419)							
WG3177623-3 DUP Aluminum (Al)-Total		L2356760-1 0.922	1.03		mg/L	11	20	01 OCT 10
Antimony (Sb)-Total		0.922	0.00047		mg/L	11	20	01-OCT-19
Andmony (30)-10(al		0.00040	0.00047					



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Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4851419								
WG3177623-3 DUP Antimony (Sb)-Total		L2356760-1 0.00046	0.00047		mg/L	1.9	20	01-OCT-19
Arsenic (As)-Total		0.00062	0.00063		mg/L	0.8	20	01-OCT-19
Barium (Ba)-Total		0.0213	0.0223		mg/L	4.3	20	01-OCT-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-OCT-19
Boron (B)-Total		0.011	0.011		mg/L	1.3	20	01-OCT-19
Cadmium (Cd)-Total		0.0000194	0.0000171		mg/L	13	20	01-OCT-19
Calcium (Ca)-Total		12.2	12.3		mg/L	0.3	20	01-OCT-19
Cesium (Cs)-Total		0.000035	0.000043		mg/L	19	20	01-OCT-19
Chromium (Cr)-Total		0.00074	0.00074		mg/L	0.6	20	01-OCT-19
Cobalt (Co)-Total		0.00042	0.00048		mg/L	13	20	01-OCT-19
Copper (Cu)-Total		0.00392	0.00322		mg/L	20	20	01-OCT-19
Iron (Fe)-Total		0.921	1.02		mg/L	10	20	01-OCT-19
Lead (Pb)-Total		0.000695	0.000725		mg/L	4.3	20	01-OCT-19
Lithium (Li)-Total		0.0018	0.0019		mg/L	1.9	20	01-OCT-19
Magnesium (Mg)-Total		1.36	1.43		mg/L	5.2	20	01-OCT-19
Manganese (Mn)-Total		0.175	0.178		mg/L	1.8	20	01-OCT-19
Molybdenum (Mo)-Total		0.00157	0.00167		mg/L	5.7	20	01-OCT-19
Nickel (Ni)-Total		0.00067	0.00073		mg/L	7.3	20	01-OCT-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-OCT-19
Potassium (K)-Total		1.99	2.01		mg/L	1.0	20	01-OCT-19
Rubidium (Rb)-Total		0.00231	0.00253		mg/L	9.3	20	01-OCT-19
Selenium (Se)-Total		0.000087	0.000107	J	mg/L	0.000019	0.0001	01-OCT-19
Silicon (Si)-Total		3.85	4.03		mg/L	4.5	20	01-OCT-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-OCT-19
Sodium (Na)-Total		5.46	5.71		mg/L	4.5	20	01-OCT-19
Strontium (Sr)-Total		0.0679	0.0673		mg/L	0.8	20	01-OCT-19
Sulfur (S)-Total		2.26	2.30		mg/L	1.7	20	01-OCT-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-OCT-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-OCT-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-19
Tin (Sn)-Total		0.00015	0.00015		mg/L	3.6	20	01-OCT-19
Titanium (Ti)-Total		0.0464	0.0540		mg/L			01-OCT-19



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Client: GHD Limited

455 Phillip Street

Waterloo ON N2L 3X2

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4851419								
WG3177623-3 DUP		L2356760-1						
Titanium (Ti)-Total		0.0464	0.0540		mg/L	15	20	01-OCT-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-19
Uranium (U)-Total		0.00102	0.00102		mg/L	0.6	20	01-OCT-19
Vanadium (V)-Total		0.00266	0.00292		mg/L	9.4	20	01-OCT-19
Zinc (Zn)-Total		0.0722	0.0741		mg/L	2.6	20	01-OCT-19
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-OCT-19
WG3177623-2 LCS Aluminum (Al)-Total			100.5		%		80-120	01-OCT-19
Antimony (Sb)-Total			97.7		%		80-120	01-OCT-19
Arsenic (As)-Total			97.1		%		80-120	01-OCT-19
Barium (Ba)-Total			98.7		%		80-120	01-OCT-19
Beryllium (Be)-Total			95.1		%		80-120	01-OCT-19
Bismuth (Bi)-Total			98.5		%		80-120	01-OCT-19
Boron (B)-Total			105.3		%		80-120	01-OCT-19
Cadmium (Cd)-Total			96.7		%		80-120	01-OCT-19
Calcium (Ca)-Total			96.5		%		80-120	01-OCT-19
Cesium (Cs)-Total			95.6		%		80-120	01-OCT-19
Chromium (Cr)-Total			97.1		%		80-120	01-OCT-19
Cobalt (Co)-Total			96.9		%		80-120	01-OCT-19
Copper (Cu)-Total			96.7		%		80-120	01-OCT-19
Iron (Fe)-Total			98.7		%		80-120	01-OCT-19
Lead (Pb)-Total			96.7		%		80-120	01-OCT-19
Lithium (Li)-Total			93.6		%		80-120	01-OCT-19
Magnesium (Mg)-Total			95.7		%		80-120	01-OCT-19
Manganese (Mn)-Total			100.3		%		80-120	01-OCT-19
Molybdenum (Mo)-Total	l		97.1		%		80-120	01-OCT-19
Nickel (Ni)-Total			95.6		%		80-120	01-OCT-19
Phosphorus (P)-Total			96.9		%		80-120	01-OCT-19
Potassium (K)-Total			98.5		%		80-120	01-OCT-19
Rubidium (Rb)-Total			102.4		%		80-120	01-OCT-19
Selenium (Se)-Total			96.3		%		80-120	01-OCT-19
Silicon (Si)-Total			95.4		%		80-120	01-OCT-19
Silver (Ag)-Total			101.7		%		80-120	01-OCT-19



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Waterloo ON N2L 3X2

Metr-T-CCMS-VA	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NG3177623-2 LCS Sodium (Na)-Total 97.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 95.2 % 80-120 01-0CT-19 97.1 % 80-120 01-0CT-19 97.7 % 80-120 01-0CT-19 97.7 % 80-120 01-0CT-19 97.7 % 80-120 01-0CT-19 97.7 % 80-120 01-0CT-19 97.7 99.99 % 80-120 01-0CT-19 99.99 99.99 % 80-120 01-0CT-19 99.99 99.99 % 80-120 01-0CT-19 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99 99.99	MET-T-CCMS-VA	Water							
Sodium (Na)-Total 97.2 % 80-120 01-OCT-19	Batch R4851419								
Strontium (Sr)-Total 95.2 % 80-120 01-OCT-19 Suffur (S)-Total 103.0 % 80-120 01-OCT-19 Tellurum (Te)-Total 96.4 % 80-120 01-OCT-19 Thallium (Ti)-Total 97.1 % 80-120 01-OCT-19 Thorium (Th)-Total 91.7 % 80-120 01-OCT-19 Titanium (Ti)-Total 99.6 % 80-120 01-OCT-19 Titanium (Ti)-Total 99.9 % 80-120 01-OCT-19 Uranium (U)-Total 99.5 % 80-120 01-OCT-19 Uranium (V)-Total 98.6 % 80-120 01-OCT-19 Vanadium (V)-Total 92.5 % 80-120 01-OCT-19 Zirconium (Zh)-Total 92.2 % 80-120 01-OCT-19 WG3177623-1 MB Aluminum (A)-Total <0.0030				97.2		%		80-120	01-OCT-19
Sulfur (S)-Total 103.0 % 80-120 01-OCT-19 Tellurium (Te)-Total 96.4 % 80-120 01-OCT-19 Thallium (TI)-Total 97.1 % 80-120 01-OCT-19 Thorium (Th)-Total 91.7 % 80-120 01-OCT-19 Tin (Sn)-Total 96.4 % 80-120 01-OCT-19 Titanium (Ti)-Total 99.99 % 80-120 01-OCT-19 Tungsten (W)-Total 99.5 % 80-120 01-OCT-19 Vanadium (V)-Total 95.9 % 80-120 01-OCT-19 Zinc (Zn)-Total 92.6 % 80-120 01-OCT-19 Zinc (Zn)-Total 92.6 % 80-120 01-OCT-19 WG3177623-1 MB Aumanum (Al)-Total 90.0030 mg/L 0.003 01-OCT-19 Arismonium (Al)-Total <0.0030	Strontium (Sr)-Total			95.2		%			
Tellurium (Te)-Total 96.4 % 80.120 01-OCT-19 Thallium (Ti)-Total 97.1 % 80.120 01-OCT-19 Thorium (Th)-Total 91.7 % 80.120 01-OCT-19 Thorium (Th)-Total 91.7 % 80.120 01-OCT-19 Tin (Sh)-Total 99.64 % 80.120 01-OCT-19 Titanium (Ti)-Total 99.99 % 80.120 01-OCT-19 Titanium (Ti)-Total 99.99 % 80.120 01-OCT-19 Tungsten (W)-Total 99.5 % 80.120 01-OCT-19 Uranium (U)-Total 99.5 % 80.120 01-OCT-19 Uranium (U)-Total 99.6 % 80.120 01-OCT-19 Zinc (Zh)-Total 92.6 % 80.120 01-OCT-19 Zinc (Zh)-Total 92.6 % 80.120 01-OCT-19 Zinc (Zh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Z)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.2 % 80.120 01-OCT-19 Zinconium (Sh)-Total 92.0 % 80.120 01-OCT-19 Zinconium	Sulfur (S)-Total			103.0		%		80-120	01-OCT-19
Thorium (Th)-Total 91.7 % 80-120 01-OCT-19 Tin (Sn)-Total 96.4 % 80-120 01-OCT-19 Titanium (Ti)-Total 99.99 % 80-120 01-OCT-19 Titanium (Ti)-Total 99.99 % 80-120 01-OCT-19 Tungsten (W)-Total 99.5 % 80-120 01-OCT-19 Uranium (U)-Total 99.5 % 80-120 01-OCT-19 Uranium (U)-Total 99.5 % 80-120 01-OCT-19 Uranium (U)-Total 98.6 % 80-120 01-OCT-19 Ziroconium (Zr)-Total 92.6 % 80-120 01-OCT-19 Ziroconium (Zr)-Total 92.2 % 80-120 01-OCT-19 Ziroconium (Zr)-Total 92.2 % 80-120 01-OCT-19 Ziroconium (Zr)-Total 92.2 % 80-120 01-OCT-19 Ziroconium (A)-Total 92.2 % 80-120 01-OCT-19 Antimony (Sb)-Total 92.2 % 80-120 01-OCT-19 Antimony (Sb)-Total 90.000 mg/L 0.000 01-OCT-19 Ansenic (As)-Total 90.0001 mg/L 0.0001 01-OCT-19 Barium (Ba)-Total 90.00010 mg/L 0.0001 01-OCT-19 Barium (Ba)-Total 90.00010 mg/L 0.0001 01-OCT-19 Bismuth (Bi)-Total 90.00010 mg/L 0.0001 01-OCT-19 Bismuth (Bi)-Total 90.00050 mg/L 0.0005 01-OCT-19 Cadmium (Cd)-Total 90.00050 mg/L 0.00005 01-OCT-19 Cadmium (Cd)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cadmium (Cd)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cesium (Cs)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total 90.00050 mg/L 0.0005 01-OCT-19 Lead (Pb)-Total 90.00050 mg/L 0.0005 01-OCT-19 Lead (Pb)-Total 90.00050 mg/L 0.0005 01-OCT-19 Lithium (Li)-Total 90.00050 mg/L 0.0005 01-OCT-19 Magnessium (Mg)-Total 90.00050 mg/L 0.0005 01-OCT-19 Magnessium (Mg)-Total 90.00050 mg/L 0.0005 01-OCT-19 Magnessium (Mg)-Total 90.00050 mg/L 0.0005 01-OCT-19 Magnessium (Mg)-Total 90.00050 mg/L 0.0005 01-OCT-19 Magnessium (Mg)-Total 90.00050 mg/L 0.0005 01-OCT-19	Tellurium (Te)-Total			96.4		%		80-120	
Thorium (Th)-Total	Thallium (TI)-Total			97.1		%		80-120	01-OCT-19
Titanium (Ti)-Total 99.99 % 80-120 01-CCT-19 Tungsten (W)-Total 99.5 % 80-120 01-CCT-19 Uranium (U)-Total 95.9 % 80-120 01-CCT-19 Vanadium (V)-Total 98.6 % 80-120 01-CCT-19 Zirconium (Zr)-Total 92.6 % 80-120 01-CCT-19 Zirconium (Zr)-Total 92.2 % 80-120 01-CCT-19 WG3177623-1 MB Aluminum (Al)-Total <0.0030	Thorium (Th)-Total			91.7		%		80-120	
Tungsten (W)-Total 99.5 % 80-120 01-CCT-19 Uranium (U)-Total 95.9 % 80-120 01-CCT-19 Vanadium (V)-Total 98.6 % 80-120 01-CCT-19 Zinconium (Zr)-Total 92.6 % 80-120 01-CCT-19 Zirconium (Zr)-Total 92.2 % 80-120 01-CCT-19 WG3177623-1 MB Numerical 0.0030 mg/L 0.003 01-CCT-19 Antimony (Sb)-Total <0.00010	Tin (Sn)-Total			96.4		%		80-120	01-OCT-19
Uranium (U)-Total 95.9 % 80-120 01-OCT-19 Vanadium (V)-Total 98.6 % 80-120 01-OCT-19 Zinc (Zn)-Total 92.6 % 80-120 01-OCT-19 Zirconium (Zr)-Total 92.2 % 80-120 01-OCT-19 WG3177623-1 MB Aluminum (Al)-Total <0.0030	Titanium (Ti)-Total			99.99		%		80-120	01-OCT-19
Vanadium (V)-Total 98.6 % 80-120 01-OCT-19 Zinc (Zn)-Total 92.6 % 80-120 01-OCT-19 Zirconium (Zr)-Total 92.2 % 80-120 01-OCT-19 WG3177623-1 MB Aluminum (Al)-Total <0.00030	Tungsten (W)-Total			99.5		%		80-120	01-OCT-19
Zinc (Zn)-Total 92.6 % 80-120 01-OCT-19 Zirconium (Zr)-Total 92.2 % 80-120 01-OCT-19 WG3177623-1 MB Aluminum (Al)-Total <0.00030	Uranium (U)-Total			95.9		%		80-120	01-OCT-19
Zirconium (Zr)-Total 92.2 % 80-120 01-OCT-19 WG3177623-1 MB Aluminum (Al)-Total <0.0030 mg/L 0.003 01-OCT-19 Antimony (Sb)-Total <0.00010 mg/L 0.0001 01-OCT-19 Arsenic (As)-Total <0.00010 mg/L 0.0001 01-OCT-19 Barium (Ba)-Total <0.00010 mg/L 0.0001 01-OCT-19 Beryllium (Be)-Total <0.00010 mg/L 0.0001 01-OCT-19 Bismuth (Bi)-Total <0.000050 mg/L 0.00005 01-OCT-19 Boron (B)-Total <0.000050 mg/L 0.00005 01-OCT-19 Cadmium (Cd)-Total <0.0000050 mg/L 0.00005 01-OCT-19 Calcium (Ca)-Total <0.050 mg/L 0.00005 01-OCT-19 Cesium (Cs)-Total <0.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total <0.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total <0.00010 mg/L 0.0005 01-OCT-19 <td>Vanadium (V)-Total</td> <td></td> <td></td> <td>98.6</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>01-OCT-19</td>	Vanadium (V)-Total			98.6		%		80-120	01-OCT-19
WG3177623-1 MB Aluminum (Al)-Total <0.0030 mg/L 0.003 01-OCT-19 Antimony (Sb)-Total <0.00010	Zinc (Zn)-Total			92.6		%		80-120	01-OCT-19
Aluminum (Al)-Total <0.0030 mg/L 0.003 01-OCT-19 Antimony (Sb)-Total <0.00010	Zirconium (Zr)-Total			92.2		%		80-120	01-OCT-19
Antimony (Sb)-Total				<0.0030		ma/l		0.003	01 OCT 10
Arsenic (As)-Total <0.00010)				
Barium (Ba)-Total <0.00010									
Beryllium (Be)-Total <0.00010									
Bismuth (Bi)-Total <0.000050 mg/L 0.00005 01-OCT-19 Boron (B)-Total <0.010						•			
Boron (B)-Total <0.010	, ,					•			
Cadmium (Cd)-Total <0.000005C mg/L 0.000005 01-OCT-19 Calcium (Ca)-Total <0.050	,				-	•			
Calcium (Ca)-Total <0.050 mg/L 0.05 01-OCT-19 Cesium (Cs)-Total <0.000010)5C				
Cesium (Cs)-Total <0.000010				<0.050		•		0.05	
Chromium (Cr)-Total <0.00010 mg/L 0.0001 01-OCT-19 Cobalt (Co)-Total <0.00010				<0.00001	0			0.00001	
Cobalt (Co)-Total <0.00010 mg/L 0.0001 01-OCT-19 Copper (Cu)-Total <0.00050	Chromium (Cr)-Total			<0.00010)			0.0001	
Copper (Cu)-Total <0.00050 mg/L 0.0005 01-OCT-19 Iron (Fe)-Total <0.010	Cobalt (Co)-Total			<0.00010)			0.0001	
Iron (Fe)-Total <0.010	Copper (Cu)-Total			<0.00050)	mg/L		0.0005	
Lead (Pb)-Total <0.000050				<0.010				0.01	
Lithium (Li)-Total <0.0010	Lead (Pb)-Total			<0.00005	50	mg/L		0.00005	
Magnesium (Mg)-Total <0.0050	Lithium (Li)-Total			<0.0010		mg/L		0.001	
Manganese (Mn)-Total <0.00010	Magnesium (Mg)-Total			<0.0050		mg/L		0.005	
Molybdenum (Mo)-Total <0.000050 mg/L 0.00005 01-OCT-19	Manganese (Mn)-Total			<0.00010)	mg/L		0.0001	
	Molybdenum (Mo)-Tota	I		< 0.00005	50	mg/L		0.00005	
	Nickel (Ni)-Total			<0.00050)			0.0005	



Workorder: L2356417 Report Date: 08-OCT-19 Page 14 of 19

Client: GHD Limited

455 Phillip Street

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4851419								
WG3177623-1 MB Phosphorus (P)-Total			<0.050		mg/L		0.05	01-OCT-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	01-OCT-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	01-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-OCT-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	01-OCT-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-OCT-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	01-OCT-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	01-OCT-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	01-OCT-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	01-OCT-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-OCT-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-OCT-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	01-OCT-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	01-OCT-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-OCT-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-OCT-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	01-OCT-19
WG3177623-4 MS Aluminum (Al)-Total		L2356759-1	103.4		%		70-130	01-OCT-19
Antimony (Sb)-Total			95.1		%		70-130	01-OCT-19
Arsenic (As)-Total			103.1		%		70-130	01-OCT-19
Barium (Ba)-Total			N/A	MS-B	%		-	01-OCT-19
Beryllium (Be)-Total			103.2		%		70-130	01-OCT-19
Bismuth (Bi)-Total			96.1		%		70-130	01-OCT-19
Boron (B)-Total			98.4		%		70-130	01-OCT-19
Cadmium (Cd)-Total			102.7		%		70-130	01-OCT-19
Calcium (Ca)-Total			N/A	MS-B	%		-	01-OCT-19
Cesium (Cs)-Total			101.1		%		70-130	01-OCT-19
Chromium (Cr)-Total			102.5		%		70-130	01-OCT-19
Cobalt (Co)-Total			103.5		%		70-130	01-OCT-19
Copper (Cu)-Total			102.1		%		70-130	01-OCT-19
Iron (Fe)-Total			103.9		%		70-130	01-OCT-19



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455 Phillip Street

Waterloo ON N2L 3X2

Contact: Airesse MacPhee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch R4851419								
WG3177623-4 MS Lead (Pb)-Total		L2356759-1	99.1		%		70-130	01-OCT-19
Lithium (Li)-Total			100.8		%		70-130	01-OCT-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	01-OCT-19
Manganese (Mn)-Total			102.8	0 5	%		70-130	01-OCT-19
Molybdenum (Mo)-Total			95.5		%		70-130	01-OCT-19
Nickel (Ni)-Total			102.0		%		70-130	01-OCT-19
Phosphorus (P)-Total			106.9		%		70-130	01-OCT-19
Potassium (K)-Total			N/A	MS-B	%		-	01-OCT-19
Rubidium (Rb)-Total			107.0		%		70-130	01-OCT-19
Selenium (Se)-Total			106.8		%		70-130	01-OCT-19
Silicon (Si)-Total			92.8		%		70-130	01-OCT-19
Silver (Ag)-Total			100.2		%		70-130	01-OCT-19
Sodium (Na)-Total			N/A	MS-B	%		-	01-OCT-19
Strontium (Sr)-Total			N/A	MS-B	%		-	01-OCT-19
Sulfur (S)-Total			104.2		%		70-130	01-OCT-19
Tellurium (Te)-Total			89.8		%		70-130	01-OCT-19
Thallium (TI)-Total			97.8		%		70-130	01-OCT-19
Thorium (Th)-Total			102.6		%		70-130	01-OCT-19
Tin (Sn)-Total			94.6		%		70-130	01-OCT-19
Titanium (Ti)-Total			98.7		%		70-130	01-OCT-19
Tungsten (W)-Total			97.4		%		70-130	01-OCT-19
Uranium (U)-Total			99.98		%		70-130	01-OCT-19
Vanadium (V)-Total			105.2		%		70-130	01-OCT-19
Zinc (Zn)-Total			96.6		%		70-130	01-OCT-19
Zirconium (Zr)-Total			95.2		%		70-130	01-OCT-19
NH3-F-VA	Water							
Batch R4857533								
WG3179196-3 DUP Ammonia, Total (as N)		L2356417-1 0.0382	0.0364		mg/L	4.7	20	02-OCT-19
WG3179196-2 LCS Ammonia, Total (as N)			97.5		%		85-115	02-OCT-19
WG3179196-1 MB Ammonia, Total (as N)			<0.0050		mg/L		0.005	02-OCT-19
WG3179196-4 MS		L2356455-1			-			



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA	Water							
Batch R4857533 WG3179196-4 MS Ammonia, Total (as N)		L2356455-1	96.8		%		75-125	02-OCT-19
NO2-L-IC-N-VA	Water							
Batch R4857435 WG3177647-3 DUP Nitrite (as N)		L2356417-1 0.0048	0.0044		mg/L	8.7	20	01-OCT-19
WG3177647-2 LCS Nitrite (as N)			99.8		%		90-110	01-OCT-19
WG3177647-1 MB Nitrite (as N)			<0.0010		mg/L		0.001	01-OCT-19
WG3177647-4 MS Nitrite (as N)		L2356455-1	98.8		%		75-125	01-OCT-19
NO3-L-IC-N-VA	Water							
Batch R4857435 WG3177647-3 DUP		L2356417-1 0.665	0.004					
Nitrate (as N) WG3177647-2 LCS Nitrate (as N)		0.005	0.664 99.9		mg/L %	0.2	20	01-OCT-19
WG3177647-1 MB Nitrate (as N)			<0.0050		mg/L		90-110 0.005	01-OCT-19 01-OCT-19
WG3177647-4 MS Nitrate (as N)		L2356455-1	N/A	MS-B	%		-	01-OCT-19
PH-PCT-VA	Water							
Batch R4851485 WG3177659-2 CRM pH		VA-PH7-BUF	7.04		рН		6.9-7.1	01-OCT-19
WG3177659-4 DUP pH		L2356417-1 7.79	7.83	J	рН	0.04	0.3	01-OCT-19
SO4-IC-N-VA	Water							
Batch R4857435								
WG3177647-3 DUP Sulfate (SO4)		L2356417-1 29.9	29.8		mg/L	0.1	20	01-OCT-19
WG3177647-2 LCS Sulfate (SO4)			100.8		%		90-110	01-OCT-19
WG3177647-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	01-OCT-19



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Client:

GHD Limited

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-VA Batch R4857435	Water							
WG3177647-4 MS Sulfate (SO4)		L2356455-1	93.4		%		75-125	01-OCT-19
TDS-VA	Water							
Batch R4858853								
WG3180359-3 DUP Total Dissolved Solids		L2356455-3 562	571		mg/L	1.6	20	03-OCT-19
WG3180359-2 LCS Total Dissolved Solids			99.4		%		85-115	03-OCT-19
WG3180359-1 MB Total Dissolved Solids			<10		mg/L		10	03-OCT-19

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455 Phillip Street Waterloo ON N2L 3X2

Contact: Airesse MacPhee

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

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

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.

Workorder: L2356417 Report Date: 08-OCT-19

Client: GHD Limited

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Contact: Airesse MacPhee

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID [*]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	26-SEP-19 13:50	01-OCT-19 08:37	0.25	115	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low	Level)						
	1	26-SEP-19 13:50	01-OCT-19 07:23	3	5	days	EHTR
Nitrite in Water by IC (Low	Level)						
	1	26-SEP-19 13:50	01-OCT-19 07:23	3	5	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2356417 were received on 30-SEP-19 09:48.

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 predetermined 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

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2356417-COEC

Page of

	www.alsglobal.com			1																			
Report To	Contact and company name below will app	ear on the final report		Report Format	/ Distribution		1	-				٥- ټر	Contac	t you	r AM t	confirm	all E&I	PTATS	(surch:	arges n	nay ap	oply)	
Company:	GHD Limited		Select Report F	Format: 🖸 PDF	☑ EXCEL ☑ EDIC	(DIGITAL)		Reg	gular	[R] {	☑ Star	ndard T	AT if re	eceived	by 3 p	m - busine	ss days -	no surch	arges ap	iply			
Contact:	Airesse MacPhee		Quality Control	(QC) Report with R	eport 🗹 YES	□ NO) sk	4 day	/ [P4-2	20%]			NCY	1 Bu	sines	s day [E	1 - 100	%]					
Phone:	604 248 3661		☐ Compare Result	s to Criteria on Report -	provide details below	if box checked	less (3 day	/ [P3-2	25%]			ERGE	Same	e Day	Weeke	nd or S	tatuto	y holi	day [E	2 -20	0%	п
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Street:	455 Phillip Street		Email 1 or Fax	airesse.macphee@	ghd.com	· · · · · · · · · · · · · · · · · · ·		Date an	d Time	Requir	ed for	all E&F	TATS	::			dd-	-mann	yy hh:	mm			
City/Province:	Waterloo, ON		Email 2	Laurie.Clark@ghd	.com, Natasha.T	uri@ghd.com	For te	sts that c	an not b	e perfo	rmed ac	ccording	g to the	service	level s	elected, yo	will be c	ontacted.	_				
Postal Code:	N2L 3X2		Email 3	Michaela.Dyck@g	hd.com,Lainey.K	(ong@ghd.com								Ana	lysis	Reques	t						
Invoice To	Same as Report To ☑ YES [□ NO		Invoice Dis	stribution				Indica	ate Filte	red (F)), Prese	erved (F	P) or Fi	itered a	nd Preser	ved (F/P)	below				leta	
	Copy of Invoice with Report ☑ YES [□ NO	Select Invoice I	Distribution: 🗵 EMA	IL MAIL	FAX	I													\Box		provide further def	
Company:			Email 1 or Fax	APinvoices-735@	ghd.com		T			\neg			<u>@</u>					1				<u> </u>	
Contact:			Email 2				1	_		Į	l		ljes									ē l	
	Project Information		Oi	l and Gas Require	d Fields (client i	use)	1	N+Z	.		1		Hardness)							1		١٩	
ALS Account	# / Quote #: Q72562		AFE/Cost Center:		PO#		1	NO3.	:		1		ģ.									9	
Job #:	056484-51		Major/Minor Code:		Routing Code:		1]		Ē	ත								(please	8
PO / AFE:	73515713-2	·	Requisitioner:				1 _	NO2		j			9	Ε		- 1					ا ہ	5	¥
LSD:	Phase 51 - Comox Valley SW		Location:				1 2	S04, I					. <u>E</u>	(including Hg)	/	- 1					로	퉏	CONTAINERS
ALS Lab Wo	ırk Order# (lab use only):		ALS Contact:	Selam W.	Sampler: N	Turl	Alkalinity (Specia	(Ci, F, St					Dissolved Metals (including Hg,	Fotal Metals (inc							8		NUMBER OF CO
ALS Sample #	Sample Identification	and/or Coordinates		Date	Time	I	1 <u>i</u>	Si l		ŀ			총	₹	1						≣	븚	
(lab use only)	•			(dd-mmm-yy)	(hh:mm)	Sample Type	₽¥	Anions	돐	ပ္ပ	NH3	TDS	SiS	Tota	М	1					SAMPLES	Sample is	3
	NS-56484-26091	9-NT-11)	26-SEP-19	13:50	water.	V	X	V	蔂	X	X	文	$\overline{\mathbf{x}}$	***					\neg		_	b
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		Special Instructions / Sp	ecify Criteria to	add on report by clic	king on the drop-	down list below		<u> </u>			SAN	IPLE ·	CON	OITIO	N AS	RECEIV	ED (lat	use o	nly)				
Drinking	g Water (DW) Samples¹ (client use)			ctronic COC only)			Froz	en			-		SIF C	bser	ation:	3 Ye	15		· · · · · · · · · · · · · · · · · · ·	Νo			П
Are samples tal	ken from a Regulated DW System?	14 (111.	. (7	lce F	Packs		Tce Cı	ubes		Custo	dy se	al inta	ıct Y	es			No]
□ <i>Y</i>	ES 🗋 NO	# Short	holdi	ing tim	es 🗷	>	Cool	ling tnit	iated														1
Are samples for	r human consumption/ use?	V 0,1001 1	1 -0(0	1 (- 3 .			IN	IITIAL C	OOLE	RTEM	PERAT	URES	°C			FINAL	COOLE	TEMP	ERATUF	ES °C		
□ Y	☐ YES ☐ NO			J								I				5"			.				
	/ SHIPMENT RELEASE (client use			INITIAL SHIPMEN	FRECEPTION (lab use only)						F	INAL	SHIP	MENT	RECE	TION (lab us	only)	<u> </u>			
Released by:	M. Lu Sept. 27	19 \$30	Received by:		Date:		Time			ived t	y:	10	χ. Σ		Date	305	وم	10		تا	ime [] Z	181	14
REFER TO BAC	K PAGE FOR ALS LOCATIONS AND SAMPLIN	G INFORMATION		WHI	TE - LABORATOR	RY COPY YEL	LOW -	CLIEN	T COP	Ϋ́							- 1				8	EPT 2017	FRONT

Appendix H Validation Memoran**da**



Memorandum

June 14, 2019

To:	Michaela Dy	yck, Natasha	a Turl, Lainey Kong	F	Ref. No.:	056484-52 Campbell Rive	er
From:	Airesse Mad	Phee/vl/73		7	Гel:	604-248-3661	
CC:							
Subject:	Data Qualit	y Assessm	ent and Validation				
Laboratory: Lab Job No.: Media Sample	L2267	Canada Ltd. 7312, L2266 ndwater, Sur	674, L2266676 face Water	Date(s)	Sampled:	April 30-May 1	, 2019
QA/	QC		Criteria	Pass	Qualifier	s Fail	N/A
Holding Time	es	Analyte spe	cific				
Field Duplica Field Blank (I Trip Blank	blind)	Matrix spec Non-detect Non-detect					
Temperature Lab QA/QC		Analyte spe	cific dard recoveries				
Data OK for U	Jse	Yes	With Qualifiers 🛛	No 🗌	Initial: AM		

The following results are qualified due to holding time exceedances:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2266674	04/30/2019	WG-56484-300419-NT-01	pH, lab	7.75	J	s.u.
L2266674	05/01/2019	WG-56484-010519-NT-10	pH, lab	8.13	J	s.u.
L2266674	05/01/2019	WG-56484-010519-NT-12	pH, lab	8.24	J	s.u.
L2266674	05/01/2019	WG-56484-010519-CF-13	pH, lab	7.97	J	s.u.
L2266674	04/30/2019	WG-56484-300419-NT-02	pH, lab	8.20	J	s.u.
L2266674	04/30/2019	WG-56484-300419-CF-03	pH, lab	8.19	J	s.u.
L2266674	04/30/2019	WG-56484-300419-CF-04	pH, lab	7.98	J	s.u.
L2266674	04/30/2019	WG-56484-300419-CF-05	pH, lab	8.01	J	s.u.
L2266674	04/30/2019	WG-56484-300419-NT-06	pH, lab	8.02	J	s.u.
L2266674	04/30/2019	WG-56484-300419-NT-07	pH, lab	7.97	J	s.u.
L2266674	04/30/2019	WG-56484-300419-NT-08	pH, lab	8.09	J	s.u.
L2266676	05/01/2019	WS-56484-010519-CF-01	pH, lab	7.05	J	s.u.





Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2266676	05/01/2019	WS-56484-010519-CF-02	pH, lab	6.99	J	s.u.
L2266676	05/01/2019	WS-56484-010519-CF-03	pH, lab	7.00	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-14	pH, lab	8.15	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-16	pH, lab	8.30	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-17	pH, lab	8.08	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-18	pH, lab	8.32	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-19	pH, lab	8.31	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-20	pH, lab	8.32	J	s.u.
L2267312	05/01/2019	WG-56484-010519-CF-21	pH, lab	8.21	J	s.u.

The following results are qualified based on field blank contamination:

Lab Report #	Sample Date (mm/dd/yyyy)		Analyte	Result	Qualifier	Units
L2267312	05/01/2019	WG-56484-010519-NT-15	Barium (dissolved)	0.00015	U	mg/L

The following results are qualified based on field duplicate variability:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2267312	05/01/2019	WG-56484-010519-CF-18	Selenium (dissolved)	0.000114	J	mg/L
L2267312	05/01/2019	WG-56484-010519-CF-19	Selenium (dissolved)	0.000169	J	mg/L
L2267312	05/01/2019	WG-56484-010519-CF-16	Alkalinity, carbonate	3.4	J	mg/L
L2267312	05/01/2019	WG-56484-010519-CF-17	Alkalinity, carbonate	1.0	UJ	mg/L

Notes:

J - Estimated concentration

UJ - Non-detect with an Estimated Report Limit

U - Not Detected

s.u. - Standard pH Units

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Memorandum

September 16, 2019

То:	Michae	ela Dyo	ck, Lainey I	Kong		R	ef. No.:	056484-5 Campbel	_	
		M								
From:	Airess	e MacF	Phee/cs/10			Т	el:	604 248	3661	
Subject:	Data C	Quality	Assessm	ent and Validation	on					
Laboratory:	A	ALS Ca	nada Ltd.			Date(s) S	ampled:	June 25-2	6, 2019)
Lab Job No.:	L	L23008	98, L230011	3, L2300116						
Sampled By:	(Chris Th	norne							
Media Sample	ed: (Ground	water, Surfa	ce Water						
QA/	QC			Criteria		Pass	Qualifier	s Fa	il	N/A
Holding Time	es		Analyte spe	cific			\boxtimes]	
Field Duplica	te (blind	d)	Matrix spec	fic			\boxtimes]	
Field Blank (b	olind)		Non-detect			\boxtimes]	
Trip Blank			Non-detect]	\boxtimes
Temperature			Analyte spe	cific		\boxtimes]	
Lab QA/QC			Within stand	dard recoveries		\boxtimes]	
Data OK for U	Jse		Yes 🗌	With Qualifiers ⊠] N	lo 🗌	Initial: AM			

The following results are qualified due to holding time exceedance:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2300113	06/25/2019	WG-56484-250619-CT-07	Nitrate (as N)	0.0279	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-16	Nitrate (as N)	2.40	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-17	Nitrate (as N)	1.15	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-08	Nitrate (as N)	0.237	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-09	Nitrate (as N)	0.228	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-10	Nitrate (as N)	0.0676	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-11	Nitrate (as N)	0.0991	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-12	Nitrate (as N)	0.113	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-13	Nitrate (as N)	0.113	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-14	Nitrate (as N)	0.164	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-15	Nitrate (as N)	0.377	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-07	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-16	Nitrite (as N)	0.0028	J	mg/L





Lab	Sample Date	Sample ID	Analyte	Result	Qualifier	Units
Report #	(mm/dd/yyyy)					
L2300113	06/25/2019	WG-56484-250619-CT-17	Nitrite (as N)	0.0050	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-08	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-09	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-10	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-11	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-12	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-13	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-14	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-15	Nitrite (as N)	0.0010	UJ	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-07	Nitrite/Nitrate	0.0279	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-16	Nitrite/Nitrate	2.40	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-17	Nitrite/Nitrate	1.15	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-08	Nitrite/Nitrate	0.237	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-09	Nitrite/Nitrate	0.228	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-10	Nitrite/Nitrate	0.0676	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-11	Nitrite/Nitrate	0.0991	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-12	Nitrite/Nitrate	0.113	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-13	Nitrite/Nitrate	0.113	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-14	Nitrite/Nitrate	0.164	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-15	Nitrite/Nitrate	0.377	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-07	pH, lab	7.79	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-16	pH, lab	8.14	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-17	pH, lab	7.99	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-08	pH, lab	8.21	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-09	pH, lab	8.21	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-10	pH, lab	8.32	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-11	pH, lab	8.04	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-12	pH, lab	7.99	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-13	pH, lab	7.99	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-14	pH, lab	8.04	J	s.u.
L2300113	06/25/2019	WG-56484-250619-CT-15	pH, lab	8.21	J	s.u.
L2300116	06/25/2019	WS-56484-250619-CT-01	Nitrate (as N)	0.0050	UJ	mg/L
L2300116	06/25/2019	WS-56484-250619-CT-01	Nitrite (as N)	0.0010	UJ	mg/L
L2300116	06/25/2019	WS-56484-250619-CT-01	Nitrite/Nitrate	0.0051	UJ	mg/L
L2300116	06/25/2019	WS-56484-250619-CT-01	pH, lab	7.11	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-18	pH, lab	8.00	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-19	pH, lab	8.23	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-20	pH, lab	8.20	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-21	pH, lab	7.85	J	s.u.

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Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2300898	06/26/2019	WG-56484-260619-CT-23	pH, lab	8.09	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-24	pH, lab	8.09	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-25	pH, lab	8.24	J	s.u.
L2300898	06/26/2019	WG-56484-260619-CT-26	pH, lab	8.18	J	s.u.

The following results are qualified due to field duplicate variability:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2300113	06/25/2019	WG-56484-250619-CT-08	Copper (dissolved)	0.00023	J	mg/L
L2300113	06/25/2019	WG-56484-250619-CT-09	Copper (dissolved)	0.00046	J	mg/L

Notes:

J - Estimated concentration
 UJ - Not Detected; Estimated Reporting Limit
 N - Nitrogen
 s.u. - Standard pH Units

3 056484Memo-10



Memorandum

October 16, 2019

To:	Michaela Dyck; Lainey Kong; Chris Thorne; Natasha Turl; Airesse MacPhee		ne;	R	tef. No.:	056484- Campbe		er		
From:	Laura	Ermet	a/ev/13			Т	el:	519-340	-4375	
Subject:	Data (Quality	/ Assessm	ent and Validati	ion					
Laboratory:		ALS Ca	ınada Ltd.			Date(s) S	Sampled:	Septemb	er 22 -	23, 2019
Lab Job No.:		L23527	08; L235360	9; L2353611; L235	54648					
Sampled By:		Natash	a Turl							
Media Sample	ed:	Ground	water and Si	urface Water						
QA/	QC			Criteria		Pass	Qualifier	s F	ail	N/A
Holding Time	es		Analyte spec	cific						
Field Duplica	te (blin	d)	Within 50%	of original/<1xRL			\boxtimes			
Field Blank (b	blind)		Non-detect			\boxtimes				
Trip Blank			Non-detect			\boxtimes				
Temperature			Analyte spec	cific		\boxtimes				
Lab QA/QC			Within stand	lard recoveries			\boxtimes			
Data OK for U	Jse		Yes 🗌	With Qualifiers 🛭		lo 🗌	Initial: LE			

The following results are qualified due to holding time exceedance:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2352708	09/22/2019	WG-56484-220919-NT-01	pH, lab	7.78	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-02	pH, lab	7.94	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-03	pH, lab	8.03	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-04	pH, lab	8.00	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-05	pH, lab	8.29	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-06	pH, lab	8.31	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-07	pH, lab	8.31	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-08	pH, lab	8.19	J	s.u.
L2352708	09/22/2019	WG-56484-220919-NT-09	pH, lab	8.06	J	s.u.
L2352708	09/23/2019	WG-56484-230919-NT-10	pH, lab	8.28	J	s.u.
L2353609	09/23/2019	WG-56484-230919-NT-12	pH, lab	7.77	J	s.u.
L2353609	09/23/2019	WG-56484-230919-NT-13	pH, lab	8.11	J	s.u.
L2353609	09/23/2019	WG-56484-230919-NT-14	pH, lab	8.14	J	s.u.





Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2353609	09/23/2019	WG-56484-230919-NT-15	pH, lab	8.13	J	s.u.
L2353609	09/23/2019	WG-56484-230919-NT-16	pH, lab	7.99	J	s.u.
L2353609	09/23/2019	WG-56484-230919-NT-17	pH, lab	8.02	J	s.u.
L2353611	09/23/2019	WS-56484-230919-NT-01	pH, lab	7.06	J	s.u.
L2353611	09/23/2019	WS-56484-230919-NT-02	pH, lab	6.88	J	s.u.
L2354648	09/23/2019	WG-56484-230919-NT-18	Nitrate (as N)	0.142	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-19	Nitrate (as N)	0.0094	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-20	Nitrate (as N)	0.0050	UJ	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-18	Nitrite (as N)	0.0010	UJ	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-19	Nitrite (as N)	0.0101	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-20	Nitrite (as N)	0.0010	UJ	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-18	Nitrite/Nitrate	0.142	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-19	Nitrite/Nitrate	0.0196	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-20	Nitrite/Nitrate	0.0051	UJ	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-18	pH, lab	8.03	J	s.u.
L2354648	09/23/2019	WG-56484-230919-NT-19	pH, lab	7.53	J	s.u.
L2354648	09/23/2019	WG-56484-230919-NT-20	pH, lab	8.22	J	s.u.
L2354648	09/23/2019	WG-56484-230919-NT-18	Total dissolved solids (TDS)	72	J	mg/L
L2354648	09/23/2019	WG-56484-230919-NT-19	Total dissolved	345	J	mg/L
22004040	00/20/2010		solids (TDS)	0-10		mg/L
L2354648	09/23/2019	WG-56484-230919-NT-20	Total dissolved solids (TDS)	325	J	mg/L

The following results are qualified due to high matrix spike recovery:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2352708	09/22/2019	WG-56484-220919-NT-01	Sulfur (dissolved)	0.74	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-02	Sulfur (dissolved)	0.60	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-03	Sulfur (dissolved)	0.75	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-05	Sulfur (dissolved)	0.68	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-06	Sulfur (dissolved)	8.00	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-07	Sulfur (dissolved)	8.03	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-08	Sulfur (dissolved)	6.96	J	mg/L
L2352708	09/22/2019	WG-56484-220919-NT-09	Sulfur (dissolved)	4.91	J	mg/L
L2352708	09/23/2019	WG-56484-230919-NT-10	Sulfur (dissolved)	0.95	J	mg/L

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The following results are qualified due to low laboratory control sample (LCS) recovery:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2353609	09/23/2019	WG-56484-230919-NT-16	cis-1,3- Dichloropropene/ trans-1,3- Dichloropropene	0.0010	UJ	mg/L
L2353609	09/23/2019	WG-56484-230919-NT-17	cis-1,3- Dichloropropene/ trans-1,3- Dichloropropene	0.0010	UJ	mg/L
L2353609	09/23/2019	WG-56484-230919-NT-16	trans-1,3- Dichloropropene	0.00050	UJ	mg/L
L2353609	09/23/2019	WG-56484-230919-NT-17	trans-1,3- Dichloropropene	0.00050	UJ	mg/L

Please note chloromethane and vinyl chloride had high LCS recoveries in reports L2352708 and L2354648. Non-detect results associated with high LCS recoveries were not qualified. The indicated high bias would not impact the data.

The following results are qualified due to the dissolved analyte being significantly greater than the associated total analyte:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2353611	09/23/2019	WS-56484-230919-NT-02	Potassium	0.073	J	mg/L
L2353611	09/23/2019	WS-56484-230919-NT-02	Potassium (dissolved)	0.136	J	mg/L
L2353611	09/23/2019	WS-56484-230919-NT-02	Tungsten	0.00010	UJ	mg/L
L2353611	09/23/2019	WS-56484-230919-NT-02	Tungsten (dissolved)	0.00042	J	mg/L

Notes:

RL - Reporting Limit

J - Estimated concentration

UJ - Not Detected; Estimated Reporting Limit

N - Nitrogen

s.u. - Standard pH Units

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Memorandum

January 14, 2019

To:	Michaela Dy	yck, Natash	a Turl, Chris Thorne		Ref. No.:	056484-52 Campbell Rive	er
		AW)	7				
From:	Airesse Mad	cPhee/vl/78					
Subject:	Data Quality	y Assessme	ent and Validation				
Laboratory:	ALS (Canada Ltd.		Date(s)	•	November 18 2019	, 19, 25,
Lab Job No.	.: L2385	5415, L2385	5413, L2387633				
Sampled By	/: Natas	ha Turl					
Media Sampled:	Grour	ndwater, Su	rface Water				
QA/	QC		Criteria	Pass	Qualifie	rs Fail	N/A
Holding Tim	nes	Analyte sp	pecific		\boxtimes		
Field Duplic	ate (blind)	Matrix spe	ecific	\boxtimes			
Field Blank	(blind)	Non-detec	et		\boxtimes		
Trip Blank		Non-detec	et				\boxtimes
Temperatur	е	Analyte sp	pecific	\boxtimes			
Lab QA/QC		Within sta	ndard recoveries		\boxtimes		
Data OK for	Use	Yes 🗌	With Qualifiers ⊠	No 🗌	Initial: AM		

The following results are qualified due to holding time exceedance:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385413	11/19/2019	WS-56484-191119-NT-01	pH, lab	7.00	J	s.u.
L2385413	11/19/2019	WS-56484-191119-NT-02	pH, lab	7.03	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-01	pH, lab	7.82	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-10	pH, lab	7.68	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-11	pH, lab	7.92	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-12	pH, lab	8.19	J	s.u.



Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385415	11/19/2019	WG-56484-191119-NT-13	pH, lab	8.16	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-14	pH, lab	8.16	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-15	pH, lab	7.90	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-16	pH, lab	7.92	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-17	pH, lab	7.88	J	s.u.
L2385415	11/19/2019	WG-56484-191119-NT-18	pH, lab	8.02	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-02	pH, lab	8.14	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-03	pH, lab	7.91	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-04	pH, lab	8.09	J	s.u.
L2385415	11/19/2019	WG-56484-181119-NT-05	pH, lab	8.16	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-06	pH, lab	8.16	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-07	pH, lab	7.54	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-08	pH, lab	7.98	J	s.u.
L2385415	11/18/2019	WG-56484-181119-NT-09	pH, lab	8.09	J	s.u.
L2387633	11/25/2019	WG-056484-251119-CT-01	pH, lab	8.16	J	s.u.
L2387633	11/25/2019	WG-056484-251119-CT-02	pH, lab	7.97	J	s.u.

The following results are qualified based on field blank detections:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385415	11/19/2019	WG-56484-191119-NT-11	Cadmium (dissolved)	0.0000267	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-12	Cadmium (dissolved)	0.0000054	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-13	Cadmium (dissolved)	0.0000061	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-14	Cadmium (dissolved)	0.0000097	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-17	Cadmium (dissolved)	0.0000105	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-18	Cadmium (dissolved)	0.0000099	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-03	Cadmium (dissolved)	0.0000058	U	mg/L
L2385415	11/19/2019	WG-56484-181119-NT-05	Cadmium (dissolved)	0.0000115	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-06	Cadmium (dissolved)	0.0000127	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-01	Copper (dissolved)	0.00033	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-10	Copper (dissolved)	0.00276	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-11	Copper (dissolved)	0.00045	U	mg/L

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Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385415	11/19/2019	WG-56484-191119-NT-12	Copper (dissolved)	0.00085	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-13	Copper (dissolved)	0.00102	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-14	Copper (dissolved)	0.00070	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-15	Copper (dissolved)	0.00027	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-16	Copper (dissolved)	0.00037	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-17	Copper (dissolved)	0.00027	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-18	Copper (dissolved)	0.00148	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-02	Copper (dissolved)	0.00049	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-03	Copper (dissolved)	0.00214	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-04	Copper (dissolved)	0.00051	U	mg/L
L2385415	11/19/2019	WG-56484-181119-NT-05	Copper (dissolved)	0.00045	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-06	Copper (dissolved)	0.00053	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-08	Copper (dissolved)	0.00062	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-09	Copper (dissolved)	0.00400	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-10	Tin (dissolved)	0.00016	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-11	Tin (dissolved)	0.00021	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-12	Tin (dissolved)	0.00024	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-13	Tin (dissolved)	0.00011	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-17	Tin (dissolved)	0.00011	U	mg/L
L2385415	11/19/2019	WG-56484-191119-NT-18	Tin (dissolved)	0.00019	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-03	Tin (dissolved)	0.00016	U	mg/L
L2385415	11/19/2019	WG-56484-181119-NT-05	Tin (dissolved)	0.00029	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-06	Tin (dissolved)	0.00050	U	mg/L

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Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385415	11/18/2019	WG-56484-181119-NT-07	Tin (dissolved)	0.00013	U	mg/L
L2385415	11/18/2019	WG-56484-181119-NT-09	Tin (dissolved)	0.00018	U	mg/L

The following results are qualified based on dissolved results that are significantly higher than the total results:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
L2385413	11/19/2019	WS-56484-191119-NT-01	Cadmium	0.0000052	J	mg/L
L2385413	11/19/2019	WS-56484-191119-NT-01	Cadmium (dissolved)	0.0000253	J	mg/L
L2385413	11/19/2019	WS-56484-191119-NT-02	Copper	0.00051	J	mg/L
L2385413	11/19/2019	WS-56484-191119-NT-02	Copper (dissolved)	0.00087	J	mg/L
L2385413	11/19/2019	WS-56484-191119-NT-02	Tin	0.00021	J	mg/L
L2385413	11/19/2019	WS-56484-191119-NT-02	Tin (dissolved)	0.00043	J	mg/L

Notes:

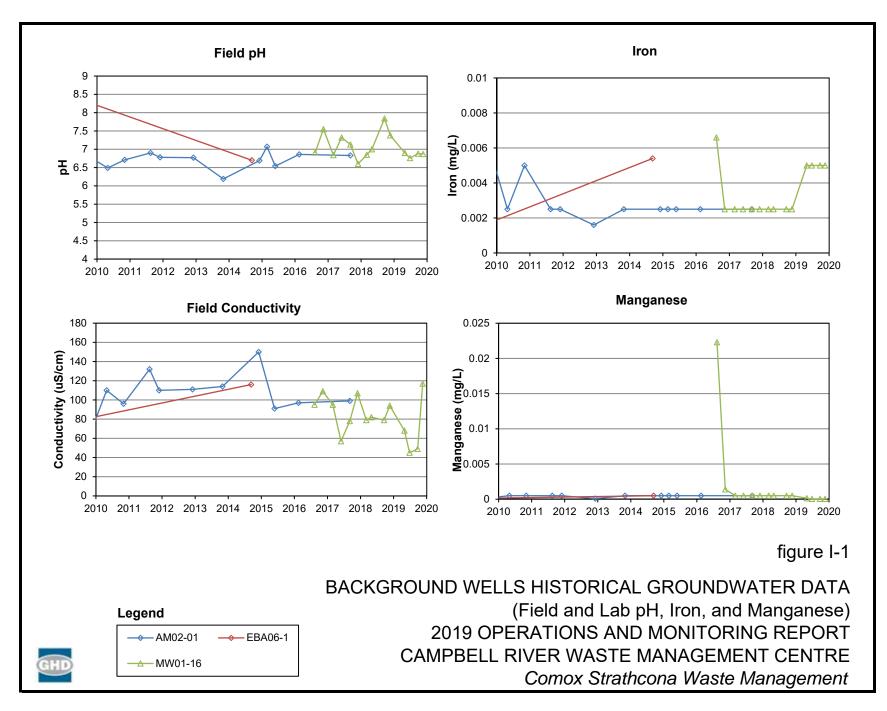
J Estimated concentration

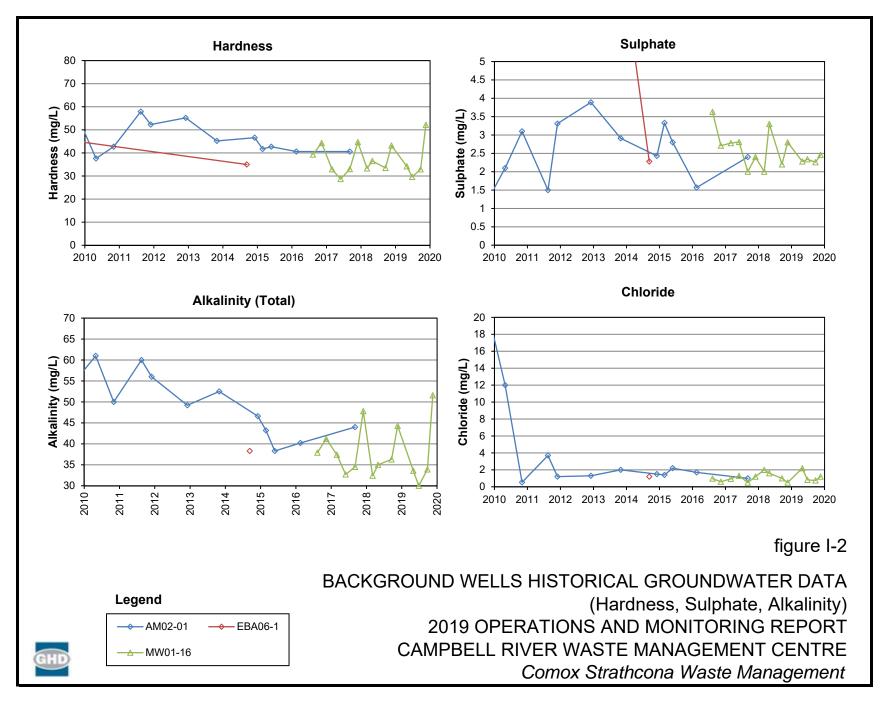
U Not Detected

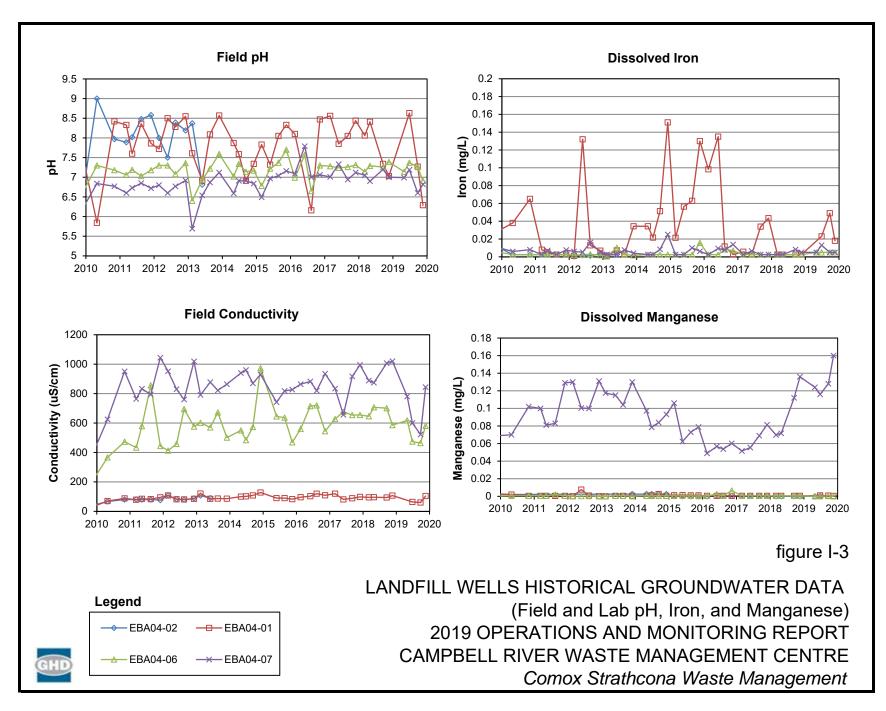
s.u. Standard pH Units

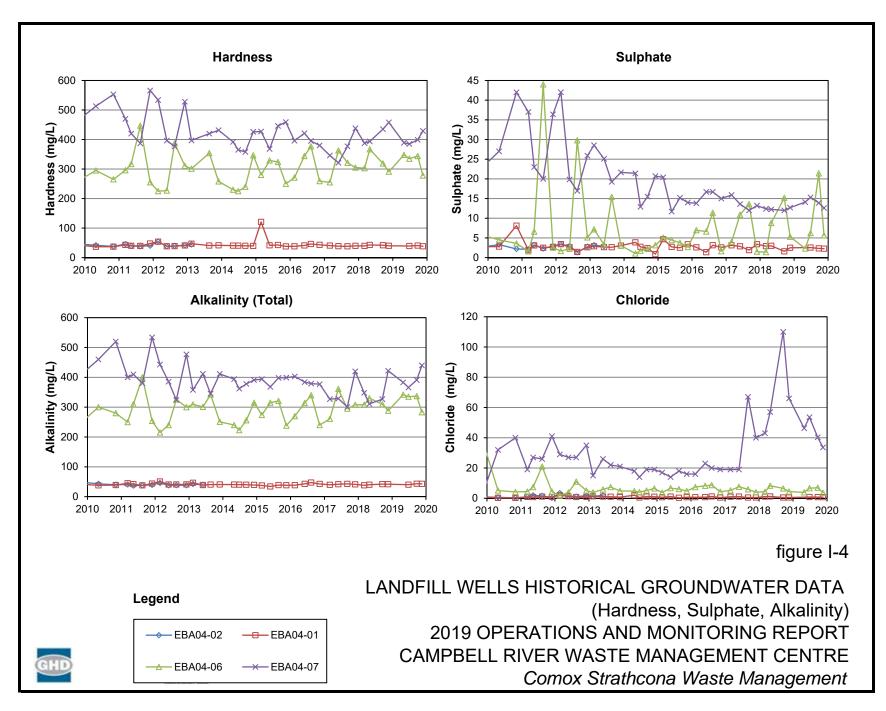
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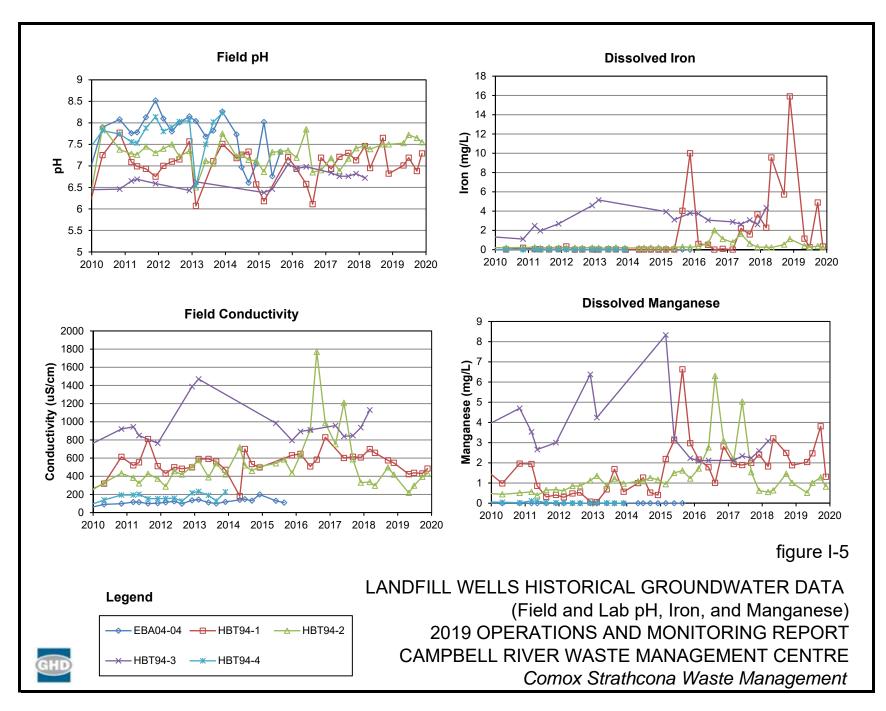
Appendix I Historical Water Quality Data

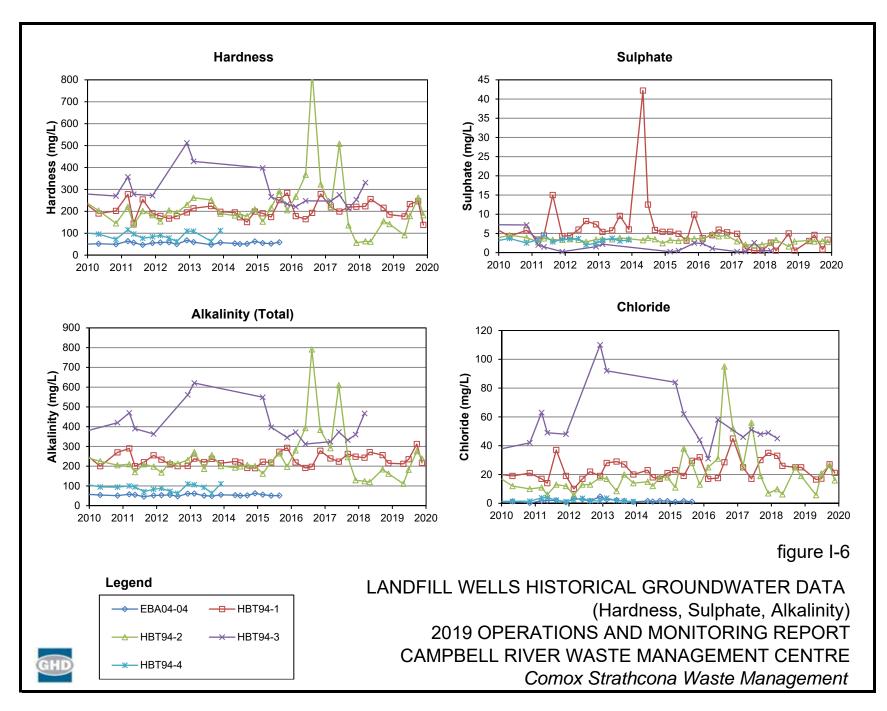


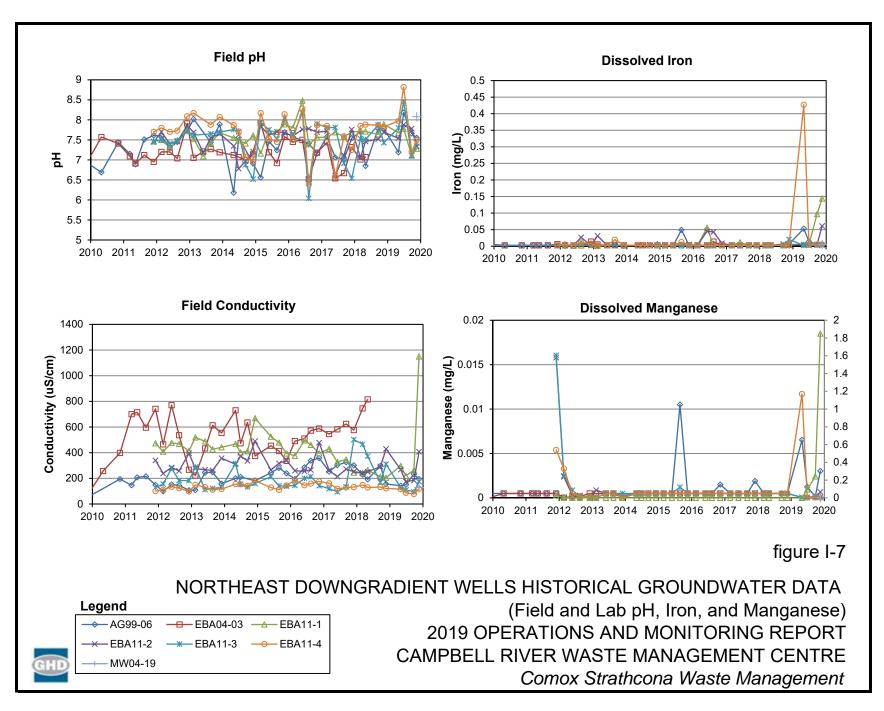


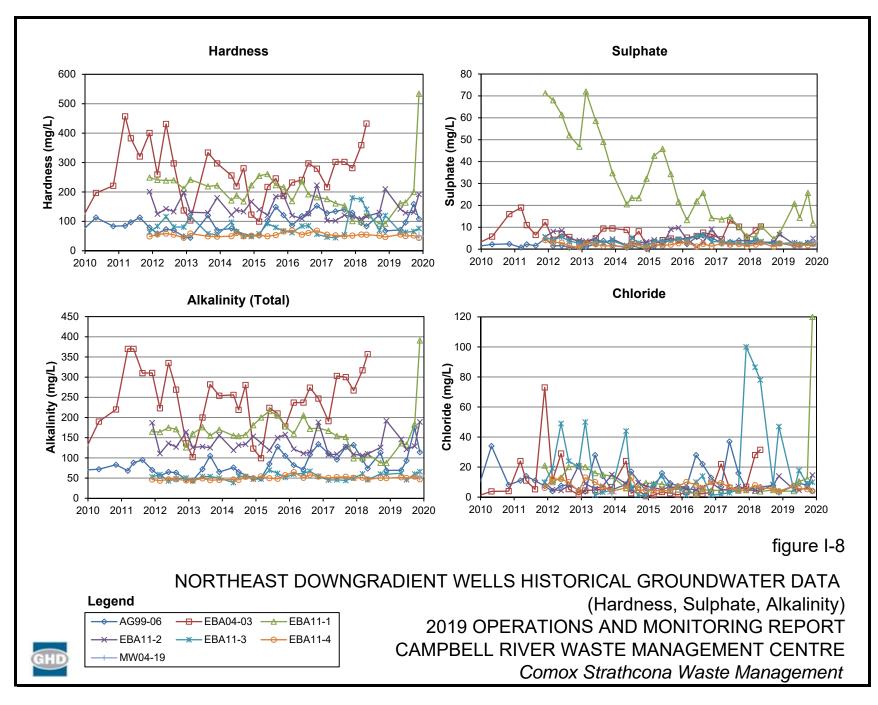


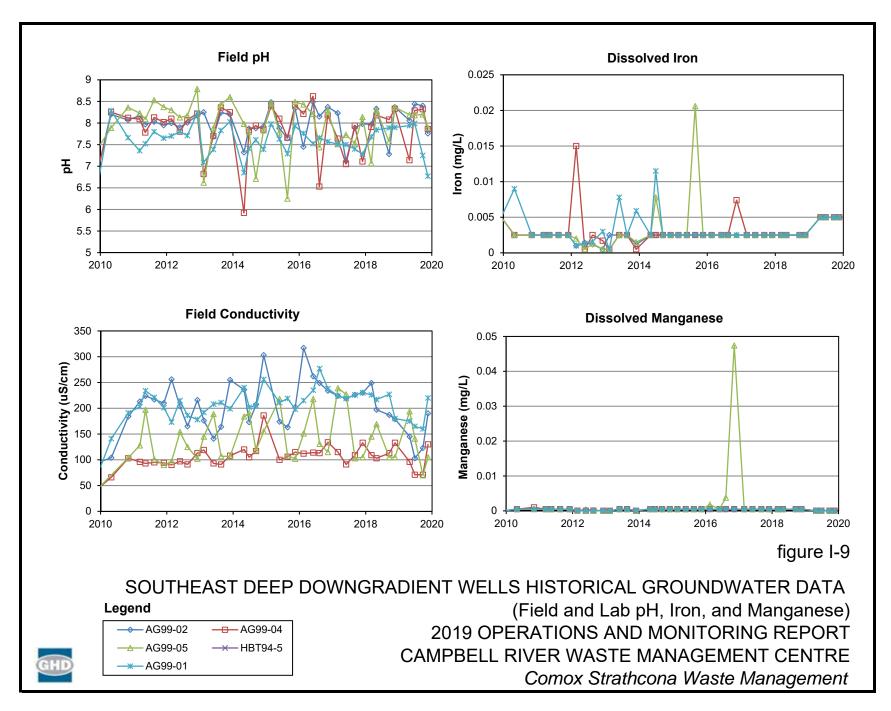


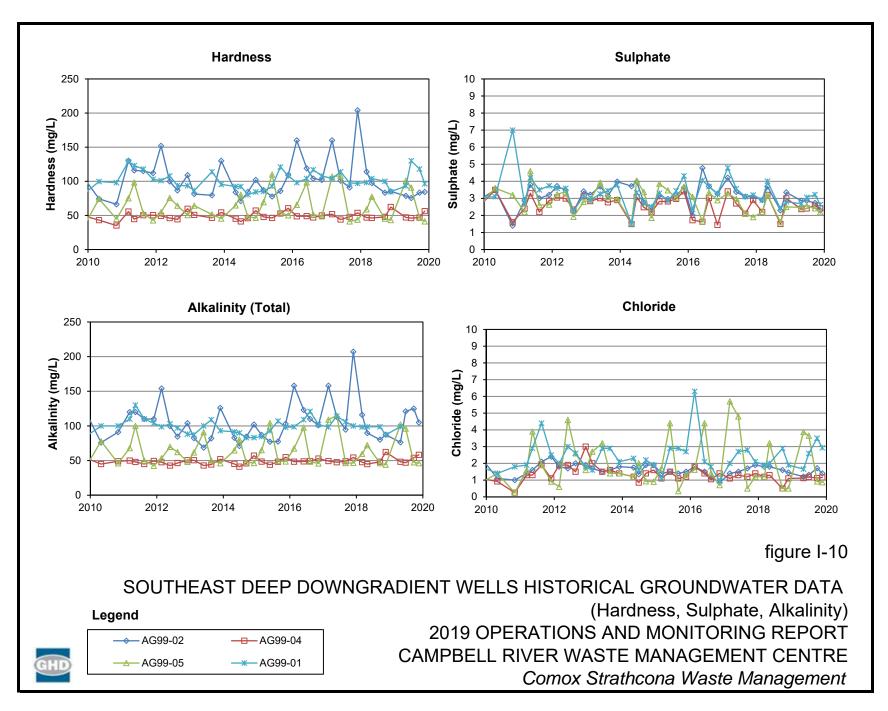


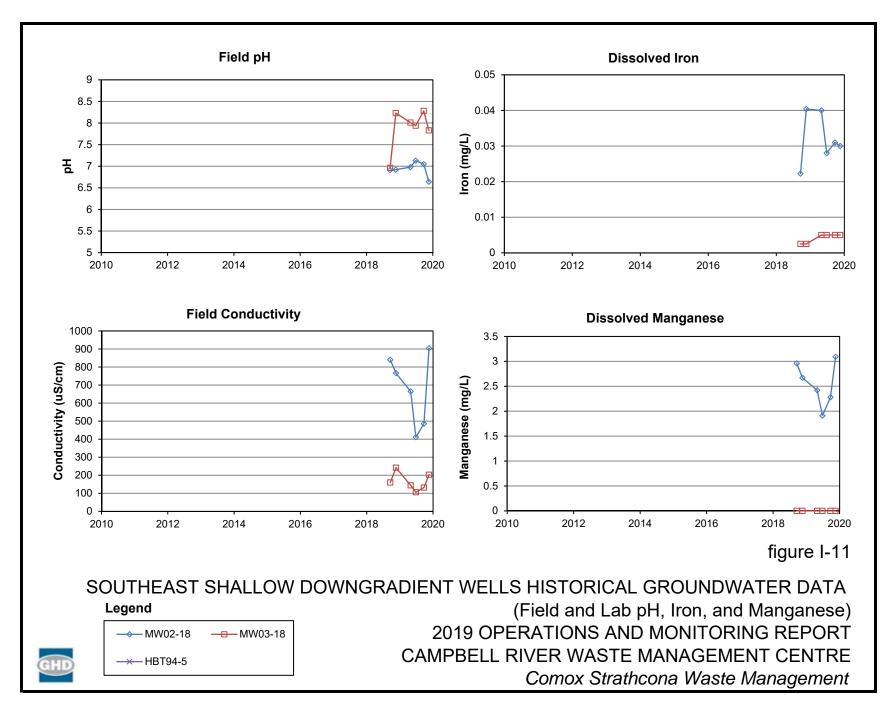


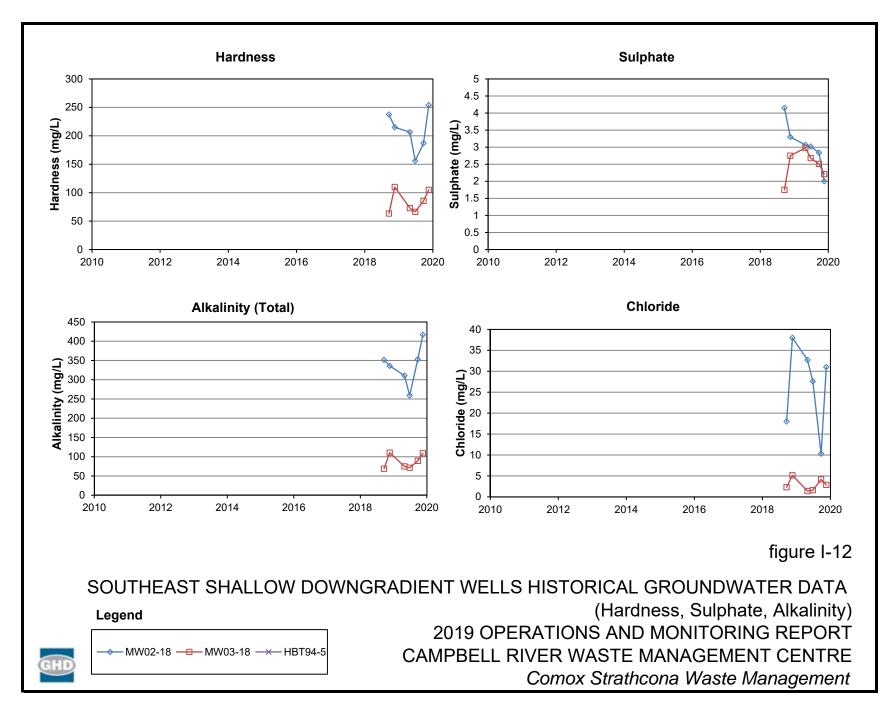


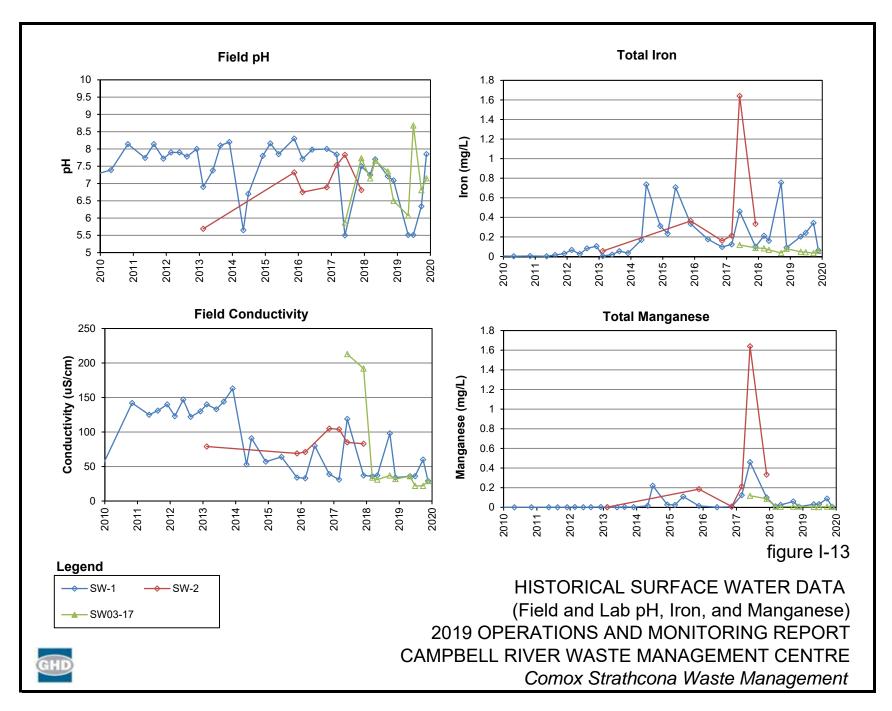


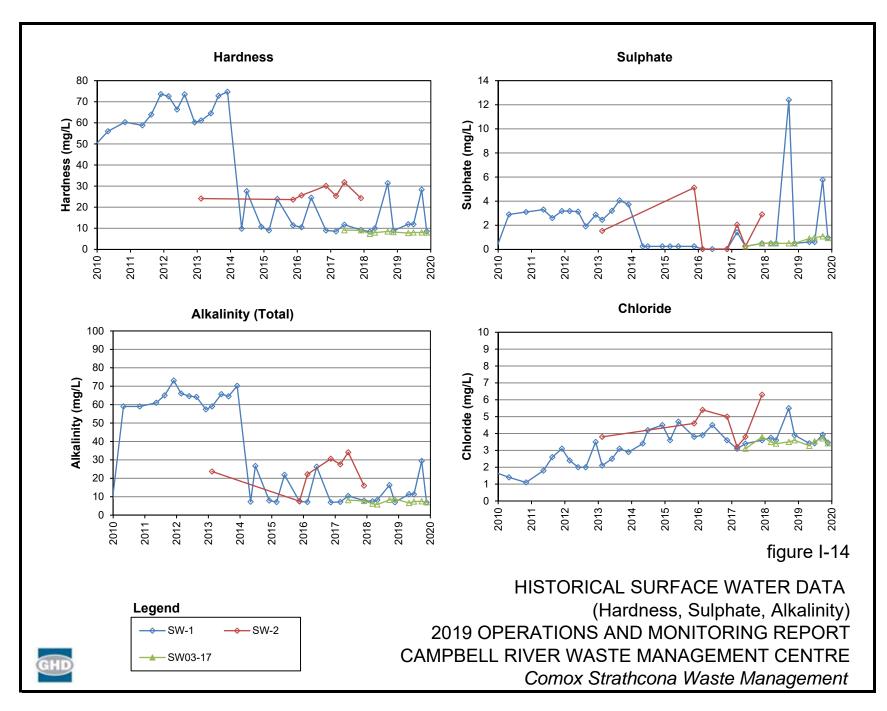


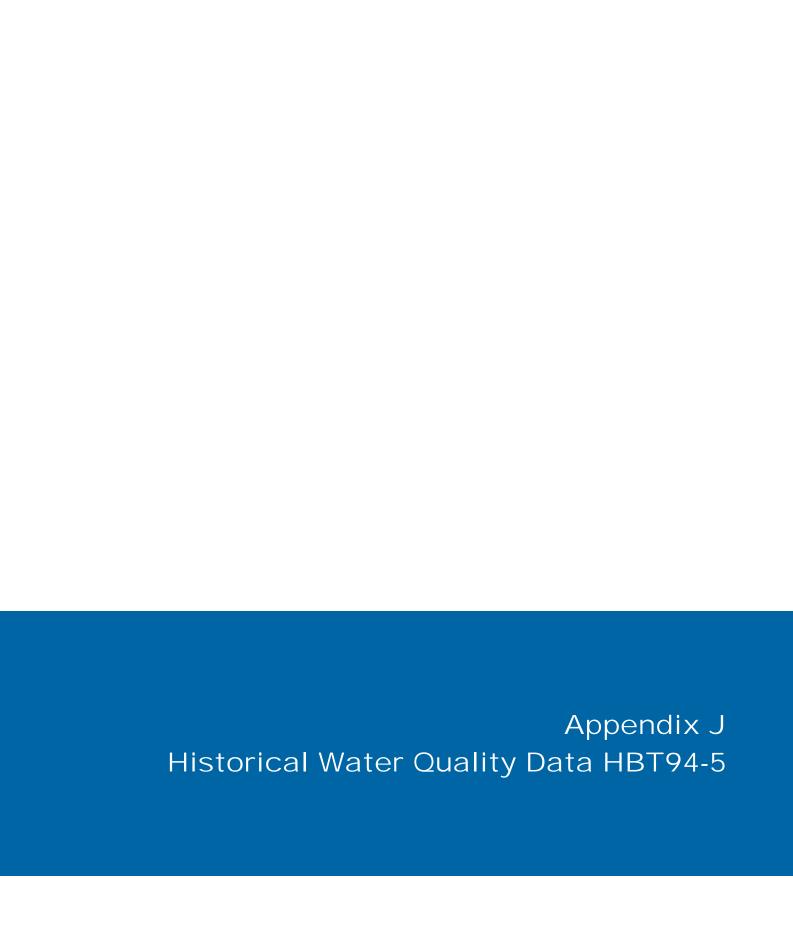












APPENDIX J: HISTORICAL WATER QUALITY DATABASE. CAMPBELL RIVER WASTE MANAGEMENT CENTRE

Parameter	Units	BC.AWQG.AL		CDWG	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	LIDTO4 E	HBT94-5	UDTO4 E	UDTO4 E	HBT94-5	HBT94-5	HBT94-5	HBT94-5
Parameter	Units	BC.AWQG.AL	BC.AWQG.DW	CDWG												HBT94-5		HBT94-5	HBT94-5				
Dhysical Tests					19-Jul-94	26-Oct-94	2-Mar-95	22-Jun-95	20-Jul-95	16-Jan-96	28-Feb-96	23-Apr-96	5-Nov-96	9-Jan-97	10-Feb-97	6-Mar-97	7-May-97	5-Jun-97	31-Jul-97	2-Oct-97	8-Dec-97	12-Jan-98	3-Feb-98
Physical Tests pH (Field)	pH Unit	6.5 - 9	6.5 - 8.5	6.5 - 8.5					-														
pH (Lab)	pH Unit	6.5 - 9	6.5 - 8.5	6.5 - 8.5	7.27	6.58	6.93	6.71	6.78	6.78	6.75	7.21	6.51	6.65	6.71	7	6.34 abc	6.42 abc	6.47 abc	6.95	6.84	6.47 abc	6.76
Specific Conductance (Field)	uS/cm	no guideline	no guideline	no guideline	1.21	0.56	0.93	0.71	0.76	0.76	0.75	7.21	0.51	0.03	0.71		0.34 abc	0.42 auc	0.47 abc	0.95	0.04	0.47 abc	0.70
Specific Conductance (Lab)	µS/cm	no guideline	no guideline	no guideline	438	484	270	373	451	225	254	340	230	236	156	203	326	400	271	206	293	175	193
Temperature (Field)	dea C	19	15	15		-	270				204	340		- 230	- 130	200	320		2/1	- 200	- 200	- 175	133
Dissolved Oxygen (Field)	ma/L	5	no auideline	no guideline		-	-	-	-	-				-		-	-				-	-	-
Hardness: Total (as CaCO ₁) (Lab)	mg/L	no auideline	no guideline	no guideline	66.1	185	-	-		80.4		114	-	-	53.2	-	-	-	-		-		74
Dissolved Solids: Total	mg/L	no guideline	no guideline	no guideline	249	282	167	188	226	156	127	218	194	118	105	102	180	259	147	160	188	114	183
Anions and Nutrients		no guideline	no guideline	no guideline																			100
Ammonia (as N)	mg/L				0.032	0.014	-	-	-	< 0.005	-	< 0.005	-	-	< 0.005	-	-			-	-	-	
Nitrogen: Nitrite (as N) (Lab)	mg/L		no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrate (as N) (Lab)	mg/L		1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride (Lab)	mg/L	32.8	10	10	17.3	22.6	7	-	-	8.2	-	6.5	10.7	-	5.5	-	-	5.4		7.8	-		4.3
Fluoride: Dissolved	mg/L	600	250	250		-	-	-		-	-		-	-	-	-	-	-		-	-		-
Sulphate (Lab)	mg/L		1.5	1.5		-	21	-		12.9	-	21.3	9.5	-	4	-	-	67	-	9.5	-	-	3.7
Alkalinity (as CaCO ₃) (Lab)	mg/L	100	500	500	189	189	109	-	-	93.2	-	145	133	-	69	-	-	132	-	77.3	-	-	94.8
Bicarbonate (as CaCO ₃)	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbonate (as CaCO ₃)	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Metals		no guideline	no guideline	no guideline																			
Aluminum: Dissolved	mg/L				< 0.20	<0.20	-	-	-	<0.20	-	< 0.20	-	-	< 0.005	-	-	-	-	-	-	-	0.012
Antimony: Dissolved	mg/L	•	0.2	0.1	< 0.20	< 0.20	-	-	-	< 0.20	-	< 0.20	-	-	-	-	-	-	-	-	-	-	< 0.001
Arsenic: Dissolved	mg/L	0.02	no guideline	0.006	0.0009	0.0001	-	-	-	< 0.0001	-	< 0.0001	-	-	0.0001	-	-	-	-	-	-	-	< 0.001
Barium: Dissolved	mg/L	0.005	0.025	0.01	0.013	0.019	-	-		0.011		<0.01	-	-	<0.01	-	-	-	-				0.004
Beryllium: Dissolved	mg/L	0.0053	no guideline	1.	< 0.005	<0.005	-	-	-	< 0.005	-	< 0.005	-	-	< 0.005	-	-	-	-	-	-	-	<0.001
Bismuth: Dissolved	mg/L		0.004	no guideline	<0.10	<0.10	-	-	-	<0.10	-	<0.10	-	-		-	-	-	-	-	-	-	
Boron: Dissolved	mg/L	no guideline	no guideline	no guideline	< 0.10	0.11	-	-	-	<0.10	-	<0.10	-	-	<0.1	-	-	-	-	-	-	-	< 0.05
Cadmium: Dissolved	mg/L	1.2	5	5	<0.0002	<0.0002	-		-	0.0024 a	-	0.0017 a			0.0015 a		-		-				0.0024 a
Calcium: Dissolved Chromium: Dissolved	mg/L ma/L	no quideline	no guideline no guideline	0.005 no guideline	21.8 <0.015	56.2 <0.015	27.9	-	-	25.5 <0.015	-	37.2 <0.01	37.1	- :	16.1 <0.001	-	- :	-	- :	-		-	22.5 <0.001
		0.001		0.05	<0.015	<0.015	-	-		<0.015	-	<0.01	- :	-	<0.001	- :	-	-	-	-	-		<0.001
Cobalt: Dissolved Copper: Dissolved	mg/L mg/L	0.001	no guideline no guideline	no quideline	<0.015	<0.015	-	-		<0.015	- :	<0.01	- :	- :	0.003	- :	- :		-	- :	- :		0.002
Iron: Dissolved (Lab)	mg/L	0.11	0.5	10 guideline	<0.010	<0.010		-		<0.010		<0.01			0.003		-			- :			0.002
Lead: Dissolved (Lab)	mg/L	0.35	no guideline	0.3	< 0.001	<0.001	- :			< 0.001	- :	< 0.001		-:-	< 0.001					- :		-	<0.001
Lithium: Dissolved	mg/L	0.55	0.05	0.01	< 0.001	< 0.001	-	-	-	< 0.001		<0.001	-		<0.001	-	-		-		-	-	<0.001
Magnesium: Dissolved	mg/L	0.87	no guideline	no guideline	2.85	10.9	4.75		-	4.09		5	6.24		3.18	-	-					-	3.62
Manganese: Dissolved	mg/L	no auideline	no guideline	no guideline	0.121 bc	0.189 bc	1.70	-	-	0.4 bc		0.009	- 0.2	-	0.215 bc	-	-				-	-	0.001
Mercury: Dissolved	ma/L	*	no guideline	0.05	-	-	-	-				-	-	-	< 0.00005	-	-	-	-		-		<0.00005
Molybdenum: Dissolved	mg/L	no auideline	0.001	0.001	< 0.030	< 0.030	-	-		< 0.030		< 0.030	-	-	< 0.03	-	-	-	-		-		< 0.001
Nickel: Dissolved	mg/L	2	0.25	no guideline	< 0.020	0.114	-	-	-	< 0.020	-	< 0.020	-	-	<0.02	-	-	-	-	-	-	-	<0.001
Phosphorus: Dissolved	mg/L		no guideline	no guideline	< 0.30	< 0.30	-	-	-	< 0.30	-	< 0.30	-	-	-	-	-	-	-	-	-	-	0.04
Potassium: Dissolved	mg/L	no guideline	no guideline	no guideline	1.86	<2.0	2.6	-	-	<2.0	-	2	<2	-	-	-	-	-	-	-	-	-	0.82
Selenium: Dissolved	mg/L	373	no guideline	no guideline	< 0.0005	< 0.0005	-	-	-	< 0.0005	-	< 0.0005	-	-	< 0.0005	-	-	-	-	-	-	-	< 0.002
Silicon: Dissolved	mg/L	0.002	0.01	0.01	7.33	11	-	-	-	11.1	-	9.3	-	-	-	-	-	-	-	-	-	-	20.9
Silver: Dissolved	mg/L	no guideline	no guideline	no guideline	< 0.015	< 0.015	-	-		< 0.015	-	< 0.01	-	-	< 0.0001	-	-	-	-	-	-	-	< 0.0001
Sodium: Dissolved	mg/L		no guideline	no guideline	66.4	26.4	23.5	-	-	17.8	-	20	17	-	12	_	-	-	-	-	-		11.3
Strontium: Dissolved	mg/L	no guideline	no guideline	200	0.137	0.203	-	-	-	0.082	-	0.165	-	-	-	-	-	-	-	-	-	-	0.073
Sulphur: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001
Thallium: Dissolved	mg/L	no guideline	no guideline	no guideline	<0.10	<0.10	-	-	-	<0.10	-	<0.10	-	-	-	-	-	-	-	-	-	-	< 0.0001
Thorium: Dissolved	mg/L	0.0003	0.002	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.0005
Tin: Dissolved	mg/L	no guideline	no guideline	no guideline	< 0.30	< 0.30	-	-	-	< 0.30	-	< 0.03	-	-	-	-	-	-	-	-	-	-	< 0.001
Titanium: Dissolved	mg/L	no guideline	no guideline	no guideline	< 0.010	< 0.010	-	-	-	<0.010	-	<0.010	-	-	-	-	-	-	-	-	-	-	<0.001
Tungsten: Dissolved	mg/L	2	no guideline	no guideline	<0.10	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Uranium: Dissolved	mg/L	no guideline	no guideline	no guideline			-	-	-		-		-	-		-	-	-	-	-	-	-	< 0.0005
Vanadium: Dissolved	mg/L	0.3	no guideline	0.02	< 0.030	< 0.030	-	-	-	< 0.030	-	< 0.030	-	-	< 0.03	-	-	-	-	-	-	-	< 0.001
Zinc: Dissolved	mg/L	0.006	no guideline	no guideline	< 0.005	0.133 a	-	-	-	0.299 a	-	0.027	-	-	0.005	-	-	-	-	-	-	-	0.012
Zirconium: Dissolved	mg/L		5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001

Zircorium: Dissolved nyNotes:

BC AWOG AL - BC Approved & Working Water Quality Guidelines for protection of aquastic life.

BC AWOG AD - BC Approved & Working Water Quality Guidelines for protection of drinking water.

CDWG - Canadain Drinking Water Custility Guidelines.

- Parameter exceeds and/or is not within the acceptable criteria ranges of the aquastic life guidelines (BC AWQG AL).

- Parameter exceeds and/or is not within the acceptable criteria ranges of the British Columbia drinking water guidelines (BC AWQG DW).

- Parameter exceeds and/or is not within the acceptable criteria ranges of the Canadain drinking water guidelines (CDWG).

APPENDIX J: HISTORICAL W																							
Parameter	Units	BC.AWQG.AL	BC.AWQG.DW	CDWG		HBT94-5			HBT94-5				HBT94-5	HBT94-5		HBT94-5		HBT94-5	HBT94-5				HBT94-5
T-1-114-1-1-					19-Jul-94	26-Oct-94	2-Mar-95	22-Jun-95	20-Jul-95	16-Jan-96	28-Feb-96	23-Apr-96	5-Nov-96	9-Jan-97	10-Feb-97	6-Mar-97	7-May-97	5-Jun-97	31-Jul-97	2-Oct-97	8-Dec-97	12-Jan-98	3-Feb-98
Total Metals																							
Aluminum: Total	mg/L	0.00	0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Antimony: Total	mg/L	0.02	no guideline	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic: Total	mg/L	0.005	0.025	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium: Total	mg/L	5	no guideline	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium: Total	mg/L	0.0053	0.004	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth: Total	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron: Total	mg/L	1.2	5	5	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium: Total	mg/L		no guideline	0.005	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium: Total	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	54.3	-	26.8	-	-	-
Chromium: Total	mg/L	0.001	no guideline	0.05	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt: Total	mg/L	0.11	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper: Total	mg/L	•	0.5	1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron: Total (Lab)	mg/L	0.35	no guideline	0.3				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead: Total	mg/L		0.05	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium: Total	mg/L	0.87	no guideline	no guideline				-	-	-	-	-	-		-	-					-	-	-
Magnesium: Total	mg/L	no guideline	no guideline	no guideline				-	-	-	-	-	-		-	-	-	10.4	-	3.64	-	-	-
Manganese: Total (Lab)	mg/L	•	no guideline	0.05				-	-	-	-	-	-	-	-	-			-	-	-	-	-
Mercury: Total	mg/L	no guideline	0.001	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum: Total	mg/L	2	0.25	no guideline		-		-	-	-	-		-	-		-	-	-	-	-	-	-	-
Nickel: Total	mg/L		no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus: Total	mg/L	no guideline	no guideline	no guideline	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium: Total	mg/L	373	no guideline	no guideline				-	-	-	-	-	-	-	-	-	-	1.11	-	1.53	-	-	-
Selenium: Total	ma/L	0.002	0.01	0.01					-		-	-	-	-	-	-	-	-		-	-	-	-
Silicon: Total	ma/L	no auideline	no guideline	no auideline	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver: Total	ma/L	*	no guideline	no guideline	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium: Total	mg/L	no guideline	no guideline	200					-				-	-		-		7.54		11.1	-	-	
Strontium: Total	mg/L	no guideline	no guideline	no guideline				-	-	-	-	-	-	-	-	-	-		-		-	-	-
Sulphur: Total	mg/L	no guideline	no guideline	no guideline					-					-							-	-	-
Tellurium: Total	mg/L	no guideline	no guideline	no guideline					-				-	-		-					-	-	-
Thallium: Total	mg/L	0.0003	0.002	no guideline					-					-							-	-	-
Thorium: Total	mg/L	no guideline	no guideline	no guideline						-	-	-									-	-	
Tin: Total	mg/L	no guideline	no guideline	no guideline					-					-				_			-	-	_
Titanium: Total	mg/L	2	no guideline	no guideline						-	-	-			-						-	-	
Tungsten: Total	mg/L	no guideline	no guideline	no guideline		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium: Total	mg/L	0.3	no guideline	0.02	- 1	- :		-		-		-		-	-	- :							-
Vanadium: Total	mg/L	0.006	no guideline	no guideline		-			-	-			-			-			-	-	_	-	
Zinc: Total	mg/L	0.000	5	5				-	-	-		-		-	-					-		-	-
	mg/L	no auideline	no quideline	no auideline	-	- :	- :			-			-			- :			-	-			-
Zirconium: Total	mg/L	no quideline	no guideline	no quideline				+		+			-			- -							+
Organic Parameters	ma/l	no quidolir -	no quidolin-	no quidoli	100	31				20		41	-	_	24	-							-
Chemical Oxygen Demand	mg/L mg/L	no guideline	no guideline	no guideline	188 7.8	1.89	- :	+	-:-	20 1.4		4.6			1.9	-	-	-	- :	-	- :	- :	- :
Organic Carbon: Dissolved	mg/L mg/l	no guideline no guideline	no guideline	no guideline no guideline	16.5	2.2		-	- :	1.4		4.6			2.2	-	-		-	- :	- -		- 1
Organic Carbon: Total	mg/L	no guideline	no guideline	no guideline	10.5	2.2	-	-	-	1.5	-	4.0	-	-	2.2	-	-	-	-	-	-	-	
Bacteria	MDNI/400 ···	an avidalia :	_	an anddate:	2000 1		.4.4	1	-		1		4.5		-					24 6			
Coliforms: Fecal	MPN/100 ml	no guideline	0	no guideline	3000 b	0	<1.1	-		<1	-	8 b	1 b		<2 4000 ha	-	-	<2 4000 h a	-	21 b	-		<2
Coliforms: Total	MPN/100 ml	no guideline	0	0	8000 bc	0	>23 bc			20 bc	-	23 bc	112 bc		1600 bc			1600 bc		32 bc	_		350 bc
Escherichla Coli	MPN/100 ml	no guideline		U U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Parameters Measured Using Field T Hardness: Total (as CaCO ₂) (Field)	ma/L		500		es) -	-		-	-	-		-	-	_	-	-	-	-	-	-	-		
		no guideline		no guideline			_																
Alkalinity (as CaCO ₃) (Field)	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrite (as N) (Field)	mg/L		1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrate (as N) (Field)	mg/L	32.8	10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride (Field)	mg/L	600	250	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate (Field)	mg/L	100	500	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Dioxide	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron: Dissolved (Field)	mg/L	0.35	no guideline	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron: Total (Field)	mg/L	1	no guideline	0.3	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese: Total (Field)	ma/L		no guideline	0.005																			

[Manganese: Lotal (Held) mg/L no Quideline 0.00

Notes:

BC.AWOG.AL - BC Approved & Working Water Quality Guidelines for protection of aquatic life.

BC.AWOG.AN - BC Approved & Working Water Quality Guidelines for protection of drinking water.

CDWG - Canadian Drinking Water Quality Guidelines.

a Parameter exceeds and/or is not within the acceptable criteria ranges of the aquatic life guidelines (BC.AWOG.AL).

a - Parameter exceeds and/or is not within the acceptable criteria ranges of the aquatic life guidelines (BC.AWOG.AL).

c - Parameter exceeds and/or is not within the acceptable criteria ranges of the Canadian drinking water guidelines (CDWG).

See notes at beginning of Appendix F.

APPENDIX J: HISTORICAL WATER QUALITY DATABASE. CAMPBELL RIVER WASTE MANAGEMENT CENTRE

APPENDIX J: HISTORICAL W																			
Parameter	Units	BC.AWQG.AL	BC.AWQG.DW	CDWG	HBT94-5 5-Mar-98	HBT94-5 13-Apr-98	HBT94-5 20-May-98	HBT94-5 25-Jun-98	HBT94-5 21-Jul-98	HBT94-5 14-Sep-98	HBT94-5 26-Oct-98	HBT94-5 2-Dec-98	HBT94-5 5-Jan-99	HBT94-5 5-Feb-99	HBT94-5 14-Apr-99	HBT94-5 29-Jul-99	HBT94-5 25-Nov-99	HBT94-5 1-Mar-00	HBT94-5 19-Apr-00
Physical Tests					3-War-96	13-Apr-96	20-Way-96	25-Jun-96	21-Jul-96	14-Sep-96	26-001-98	2-Dec-96	5-Jan-99	5-Feb-99	14-Apr-99	29-Jul-99	25-NOV-99	1-Mar-00	19-Apr-00
pH (Field)	pH Unit	6.5 - 9	6.5 - 8.5	6.5 - 8.5						5.89 abc	6.43 abc	6.16 abc	6.13 abc	7.02	6.77		-	5.78 abc	6.05 abc
pH (Lab)	pH Unit	6.5 - 9	6.5 - 8.5	6.5 - 8.5	6.68	6.84	6.49 abc	6.69	6.77	-	6.97	-	-	6.67	6.74	6.55	6.66	6.76	6.62
Specific Conductance (Field)	µS/cm	no guideline	no guideline	no guideline	-	-	-	-	-	223	256	280	208	198	621.5	-	-	188.1	353
Specific Conductance (Lab)	µS/cm	no auideline	no guideline	no guideline	256	373	276	179	203	-	253	-	-	153	261	186	198	181	326
Temperature (Field)	deg C	19	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (Field)	mg/L	5	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness: Total (as CaCO ₃) (Lab)	mg/L	no guideline	no guideline	no guideline	-		-	-	-				-	65	-		-	71	-
Dissolved Solids: Total	mg/L	no guideline	no guideline	no guideline	162	292	195	130	125		153		-	90	165	119	136	119	274
Anions and Nutrients		no guideline	no guideline	no guideline															
Ammonia (as N)	mg/L				-	-	-	-	-	-	-	-	-	0.04	-	-	-	0.04	-
Nitrogen: Nitrite (as N) (Lab)	mg/L	•	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrate (as N) (Lab)	mg/L	•	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride (Lab)	mg/L	32.8	10	10	-	6.7	-	-	7.5	-	7.4	-	-	3.3	2.9	5.5	5.7	3.5	4
Fluoride: Dissolved	mg/L	600	250	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate (Lab)	mg/L		1.5	1.5	-	19.2	-	-	13.3	-	7.4	-	-	3.3	31.1	10.3	7.7	4.2	61.8
Alkalinity (as CaCO ₃) (Lab)	mg/L	100	500	500	-	152	-	-	67.9	-	107	-	-	72.4	98.4	80.1	90.3	91	162
Bicarbonate (as CaCO ₃)	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbonate (as CaCO ₃)	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Metals		no guideline	no guideline	no guideline										0.006			-	0.01	+
Aluminum: Dissolved	mg/L		0.2	0.1	- 1	-		-										< 0.001	-
Antimony: Dissolved	mg/L	0.02	no guideline	0.006	-	-	-	-	-	-	-	-	-	<0.001	-	-		<0.001	-
Arsenic: Dissolved Barium: Dissolved	mg/L mg/L	0.02	0.025	0.006		-		- :	- :	-		-	- :	0.003	- :	-	-	0.003	-
Bervlium: Dissolved	mg/L	5	no guideline	0.01						- :			- :	<0.003	- :	- :	-	<0.003	
Bismuth: Dissolved	mg/L	0.0053	0.004	no auideline		-		- :	- :	-	- :	-		<0.001	- :	-		<0.001	
Boron: Dissolved	mg/L	no quideline	no guideline	no guideline	-	-	-	-	-	-		-	-	< 0.05	-	-	-	0.05	-
Cadmium: Dissolved	mg/L	1.2	Tio guidelli le	5	-	-	-		-	-	-	-		0.0007 a	-	-		0.0009 a	+-:-
Calcium: Dissolved	mg/L	*	no guideline	0.005									-	19.6	42	28.9	-	23.5	37.9
Chromium: Dissolved	mg/L	no auideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	<0.001		-	-	< 0.001	-
Cobalt: Dissolved	mg/L	0.001	no guideline	0.05		-			-	-		-	-	< 0.001	-	-	-	< 0.001	-
Copper: Dissolved	mg/L	0.11	no guideline	no guideline	-		-						-	0.001			-	< 0.001	-
Iron: Dissolved (Lab)	mg/L		0.5	1	-		-						-				-	-	-
Lead: Dissolved	mg/L	0.35	no guideline	0.3	-	-	-	-	-	-	-	-	-	< 0.001	-	-	-	< 0.001	-
Lithium: Dissolved	mg/L		0.05	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium: Dissolved	mg/L	0.87	no guideline	no guideline	-		-	-	-				-	2.11	5.24	4.89	-	3.43	4.34
Manganese: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	0.002	-	-	-	0.005	-
Mercury: Dissolved	mg/L	•	no guideline	0.05	-	-	-	-	-	-	-	-	-	< 0.05	-	-	-	< 0.02	-
Molybdenum: Dissolved	mg/L	no guideline	0.001	0.001	-	-	-	-	-	-	-	-	-	< 0.001	-	-	-	< 0.001	-
Nickel: Dissolved	mg/L	2	0.25	no guideline	-	-	-	-	-	-	-	-	-	0.002	-	-	-	< 0.001	-
Phosphorus: Dissolved	mg/L		no guideline	no guideline	-	-	-	-	-	-	-	-	-	0.07			-	0.1	1
Potassium: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	0.58	1.1	0.83	-	0.31	0.88
Selenium: Dissolved	mg/L	373	no guideline	no guideline	-	-	-	-	-	-	-	-	-	< 0.002	-	-	-	<0.002	
Silicon: Dissolved	mg/L	0.002	0.01	0.01	-	-	-	-	-	-	-	-	-	13	-	-	-	20.1	-
Silver: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-		-	-	-	-	-	<0.0001		7.4	-	<0.0001	7.0
Sodium: Dissolved Strontium: Dissolved	mg/L	no quideline	no guideline no guideline	no guideline 200	-				_	-	-		-	4.24 0.055	8.2	7.4	-	6.99 0.06	7.6
Sulphur: Dissolved	mg/L	no guideline no guideline				-	-		-	-	-	-		0.055	-:-	-	-	0.06	
	mg/L		no guideline no guideline	no guideline no guideline	-	-	-	- :	- :	-	-	-	-:-	<0.001	- :	-	- :	<0.001	
Tellurium: Dissolved Thallium: Dissolved	mg/L mg/L	no guideline no guideline	no guideline	no guideline	-	-	- :	- :	- :	- :	-	-	-	<0.001	- :	-		<0.001	
Thorium: Dissolved	mg/L	0,0003	0.002	no guideline	-	- :	1	- 1	-	- :	-	-	- :	<0.0001	- :	- :	-	<0.0001	
Tin: Dissolved	mg/L	no guideline	no guideline	no guideline				- :	- :		- 1			<0.0003	- :		- :	<0.0003	-
Titanium: Dissolved	mg/L	no guideline	no guideline	no guideline		-		- :	- :	-	-	-		<0.001	- :	-		<0.001	
Tungsten: Dissolved	mg/L	2	no guideline	no guideline	-	-	-	-	-	-		-	-		-	-	-		
Uranium: Dissolved	mg/L	no auideline	no guideline	no guideline		-		- :	- :	-	-	-		<0.0005	- :	-		< 0.0005	
Vanadium: Dissolved	mg/L	0.3	no guideline	0.02	-	-	-	-	-	-	-	-	-	<0.001	-	-		0.001	-
Zinc: Dissolved	mg/L	0.006	no guideline	no guideline	-	-	-	-	-	-	-	-	-	0.027	-	-	-	0.009	-
Zirconium: Dissolved	mg/L		5	5	-	-	-	-	-	-	-	-	-	< 0.001	-	-	-	< 0.01	-
	g/ L					·								30.001				10.01	

| LittCoMutti. Unscured |
Notes: Bc. AWGG.ML - Bc. Approved & Working Water Quality Guidelines for protection of aquatic life.
Bc. AWGG.ML - Bc. Approved & Working Water Quality Guidelines for protection of dininking water.
CDWG - Canadian Drinking Water Quality Guidelines.
a - Parameter exceeds and/or is not within the acceptable criteria ranges of the aquatic life guidelines (BC.AWQG.AL).
b - Parameter exceeds and/or is not within the acceptable criteria ranges of the British Columbia drinking water guidelines (BC.AWQG.DW).
c - Parameter exceeds and/or is not within the acceptable criteria ranges of the Canadian drinking water guidelines (CDWG).
*- See notes at beginning of Appendix F.

APPENDIX J. HISTORICAL WATER QUALITY DATABASE CAMPBELL RIVER WASTE MANAGEMENT CENTRE

Parameter	Units	BC.AWQG.AL	BC.AWQG.DW	CDWG	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5	HBT94-5
i didilietei	Office	DO.AWGO.AL	DO.ATTQO.DTT	CDITO	5-Mar-98		20-May-98		21-Jul-98	14-Sep-98		2-Dec-98	5-Jan-99	5-Feb-99	14-Apr-99	29-Jul-99	25-Nov-99	1-Mar-00	19-Apr-00
Total Metals					3-Wa1-30	13-Ap1-30	20-may-30	25-5011-50	Z1-001-30	14-06p-30	20-001-30	Z-D60-30	J-0411-33	3-1 60-33	14-Ap1-33	23-0UF-33	25-1404-33	1-14101-00	13-Api-00
Aluminum: Total	ma/L		0.2	0.1	-	-	-		-	-	-		-	-	-	-	-	-	+
Antimony: Total	mg/L	0.02	no guideline	0.006	- :		-	-:-	- :		- 1		- :		- :		-		-
Arsenic: Total	mg/L	0.005	0.025	0.000	-	-				-		-			- :	-			-
Barium: Total	mg/L	5	no guideline	1	- :		-	-:-	- :		- 1		- :		- :		-		-
		0.0053	0.004	no guideline	- :	-	-	-:-	- :	-	-	-	- :	- :	- :	- :			
Beryllium: Total Bismuth: Total	mg/L mg/L	no guideline	no guideline	no guideline	- :	- :	- :		- :	- :		- :	- :	-		- :			-
			no guideline								-			_				-	_
Boron: Total	mg/L	1.2	5	5	-	-	-		- :	-	-	-	-	-		-	-	-	-
Cadmium: Total	mg/L		no guideline	0.005	-		-		-	-	_	-	_	_		-		-	
Calcium: Total	mg/L	no guideline	no guideline	no guideline	-	44.8	-	-	26.3	-	30	-	-	-	-	-	21.5	-	39.1
Chromium: Total	mg/L	0.001	no guideline	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt: Total	mg/L	0.11	no guideline	no guideline	-	-	-			-	-	-	-	-	-	-	-	-	-
Copper: Total	mg/L	•	0.5	1	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Iron: Total (Lab)	mg/L	0.35	no guideline	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead: Total	mg/L	•	0.05	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium: Total	mg/L	0.87	no guideline	no guideline	-	-	-			-		-	-	-	-	-	-	-	-
Magnesium: Total	mg/L	no guideline	no guideline	no guideline	-	8.22	-	-	4.49	-	4.62	-	-	-	-	-	3.42	-	4.52
Manganese: Total (Lab)	mg/L	*	no guideline	0.05	-			-					-	-	-	-	-		-
Mercury: Total	mg/L	no guideline	0.001	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum: Total	mg/L	2	0.25	no guideline	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Nickel: Total	mg/L		no guideline	no guideline	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Phosphorus: Total	mg/L	no guideline	no guideline	no guideline	-									-	-	-		-	
Potassium: Total	mg/L	373	no guideline	no guideline	-	1.34			0.91	-	1.25	-	-	-	-	-	0.78	-	1.11
Selenium: Total	mg/L	0.002	0.01	0.01	-	-				-	-	-	-	-	-	-	-	-	-
Silicon: Total	mg/L	no auideline	no guideline	no quideline	-			-					-	-	-	-		-	
Silver: Total	mg/L	*	no guideline	no guideline	-			-					-	-	-	-		-	
Sodium: Total	mg/L	no auideline	no guideline	200		13.8			7		15			-		-	12	-	7.8
Strontium: Total	mg/L	no guideline	no guideline	no guideline		13.0	-	-			- 13		-	-			- 12	-	7.0
Sulphur: Total	mg/L	no guideline	no guideline	no guideline	-		-		-	-		-	-	-		-	-	-	-
Tellurium: Total	mg/L	no guideline	no guideline	no guideline		-	-			-		-	-	-			-	-	
Thallium: Total	mg/L	0,0003	0.002	no guideline			-	-		-		-	-	-		-	-		-
Thorium: Total	mg/L	no guideline	no guideline	no guideline	- :		-	-:-	- :		- 1		- :		- :		-		-
Tin: Total		no guideline	no guideline	no guideline	- :	- :	-			- :	-	- :	- :		-				-
	mg/L													_	- :				_
Titanium: Total	mg/L	2	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-		-	-	-	-
Tungsten: Total	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium: Total	mg/L	0.3	no guideline	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium: Total	mg/L	0.006	no guideline	no guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc: Total	mg/L	•	5	5	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Zirconium: Total	mg/L	no guideline	no guideline	no guideline	-	-	-			-	-	-	-	-	-	-	-	-	-
Organic Parameters																			
Chemical Oxygen Demand	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	<25	-	-	-	<25	-
Organic Carbon: Dissolved	mg/L	no guideline	no guideline	no guideline	-	-	-	-	-	-	-	-	-	3.4	-	-	-	2.3	-
Organic Carbon: Total	mg/L	no guideline	no guideline	no guideline	-	-	-			-		-	-	4.5	-	-	-	1.6	-
Bacteria																			
Coliforms: Fecal	MPN/100 ml	no guideline	0	no guideline	-	<2	-	-	-	-	-	-	-	6 b	<2	4 b	5 b	2 b	<2
Coliforms: Total	MPN/100 ml	no guideline	0	0	-	170 bc	-	-	-	-	-	-	-	540 bc	920 bc	14000 bc	3500 bc	3500 bc	5 bc
Escherichla Coli	MPN/100 ml	no guideline	0	0	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Parameters Measured Using Field T			ontinued due to da	ta quality issue	es)														1
Hardness: Total (as CaCO ₃) (Field)	mg/L	no guideline	500	no guideline	-	-	-	-	-	-	-	-	-	65	-	-	-	71	-
Alkalinity (as CaCO ₂) (Field)	mg/L	no guideline	no guideline	no guideline	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrite (as N) (Field)	mg/L	*	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen: Nitrate (as N) (Field)	mg/L	32.8	10	10					-					-		-		-	
Chloride (Field)	mg/L	600	250	250	-	-		-	-	-		-	-				-		+-:-
Sulphate (Field)	mg/L	100	500	500	-	-	-			-	-	-	-	-	-	-		-	<u> </u>
Carbon Dioxide	mg/L	no guideline	no guideline	no guideline	- : -										- : -				
		0.35			- :	-				-				-					
Iron: Dissolved (Field)	mg/L		no guideline	0.3		-	-			-		-	- :			-	- :		- :
Iron: Total (Field)	mg/L	1	no guideline	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manganese: Total (Field)	mg/L		no guideline	0.005	-	-	-						-	-			1 -	-	1 -

Indications to User (TMO)

Notes:

BC.AW(O.S. L. BC Approved & Working Water Quality Guidelines for protection of aquation life.

BC.AW(O.S. L. BC Approved & Working Water Quality Guidelines for protection of drinking water.

CDWG - Canadian Drinking Water Quality Guidelines.

a Parameter exceeds and/or is not within the acceptable criteria ranges of the British Columbia drinking water guidelines (BC.AW(O.S.L.)).

b - Parameter exceeds and/or is not within the acceptable criteria ranges of the British Columbia drinking water guidelines (BC.AW(O.S.DW).

c - Parameter exceeds and/or is not within the acceptable criteria ranges of the Canadian drinking water guidelines (CDWG).

- See notes at beginning of Appendix F.



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Michaela Dyck Michaela.dyck@ghd.com 604.248.3928

Gregory Ferraro Greg.ferraro@ghd.com 604.248.3670

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